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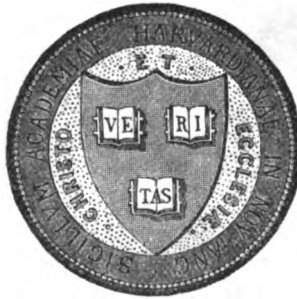
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BY
A. F. M. WILLICH, M. D.

AUTHOR OF THE LECTURES ON DIET AND REGIMEN, &c. &c.

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- ✓ X. Messrs. T. and J. POLFREEMAN's Improved Winnowing Machine, p. 454.

N.B. *Several distinct objects having occasionally been represented in one and the same Plate, the Reader ought to be apprized, that he will meet with the respective Descriptions of*

Mr. BESANT's Undershot Water-wheel, in the Article WATER, p. 298.

Rev. T. C. MUNNING's Turnip-drill, under the Article TURNIP, p. 247.

Mr. ECCLESTON's Peat-borer, in the Article PEAT, of the Supplement, pp. 443—44.

ERRATA ET CORRIGENDA.

Page 248, Col. 1, line 4, dele [*Plate II. SUPPLEMENT.*]
 — 298, — 1, — dele, in the two last lines, the words,
 "Plate II. for the Supplement;" and read,
 "in the same Plate which is annexed
 to the Article Turnep, p. 248, of this
 Volume."

— 415, — 2, — 39, read, *aquatilis*.

— 418, — 2, — 25, read, *cæsius*.

In the pages: for 225, read 425; for 228, read 428; for 229, read 429; for 230, read 430.



THE DOMESTIC ENCYCLOPÆDIA.

R U M

RUFF, or *Tringa pugnax*, L. a bird of passage, frequenting the fens of Lincolnshire, and various other parts of Britain, early in the spring; and disappearing about Michaelmas.

Towards the latter end of March, or early in April, Ruffs, for a short time, visit Martin Mere, in Lancashire; where they are taken in clap-nets, to the number of 40 or 50 dozen in a season; and fattened for the table: the food commonly employed, is bread and milk, hemp-seed, boiled wheat, and sugar: thus, in about a fortnight they become extremely fat; and are generally sold at 2s. and 2s. 6d. each. Being of an irascible disposition, it is erroneously supposed that these birds must be fed in dark places; lest, on the admission of light, they should destroy each other by combat.

Ruffs are dressed for the table, with their intestines, like snipes; and, when killed at the critical time, are by epicures considered the most delicious of morsels.

RUM, a spirituous liquor which is distilled from sugar-canes.

The best state in which rum can be imported or preserved, is that of rectified spirit; as it may thus be conveyed in one-half of its usual compass, and afterwards reduced to the proper degree of proof

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R U P

strength, by means of spring-water. It would, likewise, in this state be better calculated for punch, both on account of its finer flavour, and because the strength of the mixture may be then more uniformly regulated. Farther, fraudulent persons would now be prevented from adulterating it with *malt spirits*, and also from *dulcifying* or sweetening it with oil of vitriol, and similar pernicious drugs.

Pure, old rum, is incomparably more wholesome than brandy; Dr. SHORT, therefore, prefers it to any other spirit, both as a cordial, and for making punch. It softens and dilates the alimentary canal, while it promotes a more regular perspiration, as well as the discharge of urine. It is also of greater service in nephritic complaints; and, where the constitution is broken by hard or long-continued drinking, Dr. S. recommends it in small quantities, as being well adapted to raise and preserve the tone of the stomach.—We deem it, however, necessary to observe, that such stimulating liquors are in no case absolutely salubrious, and ought to be resorted to only as *medicines*.—See ARACK, BRANDY, and GIN.

RUNNING-THRUSH. See FRUSH.

RUNNET. See RENNET.

RUPTURE, or a partial protrusion of an intestine, is one of those

B

CONT.

complaints which has lately become so general, especially among the labouring classes, as to induce benevolent persons in the British metropolis to institute a society for the relief of the unfortunate poor afflicted with this malady, under the direction of Mr. TURNBULL.

The places in which ruptures generally appear, are the groin, scrotum, upper and anterior part of the thigh, the navel, and between the abdominal muscles. The tumor most frequently consists of a portion either of the intestinal canal, or of the omentum (known by the name of *caul*) or sometimes even of both; though instances have occurred of the liver, stomach, spleen, bladder, &c. having formed the contents.—From the nature and situation of parts, the different species are distinguished and named: thus, a rupture is called *inguinal*, when situated in the groin; but, when proceeding down to the scrotum, which is often the case, it receives the appellation of *scrotal*; when occurring on the thigh, it is termed *femoral*; and, when the navel is the part affected, *umbilical*. The size of the sac varies according to the stage of the disorder: at the beginning it appears small, but by degrees increases.

Symptoms: An elastic white swelling, attended with pain, which becomes more violent on every exertion; nausea; vomiting; and obstruction of the bowels. When the tumor is produced by a portion of the gut, without containing any feces, the surface will be found smooth or equal; and, if compressed, quickly resumes its former size on removing the finger. On the contrary, when hard feces are contained in an intestinal rupture of long standing, they will be obvious

from considerable inequalities.—Should a portion, both of intestine and caul, be included in the sac, it will then be unequal and soft; but, if arising from the caul alone, there will be no obstruction of the bowels.

The *inguinal* rupture begins in the groin, and gradually descends into the scrotum, or into the labia vaginae. The *femoral* hernia occurs more frequently in women; and is often mistaken for the former: hence it is necessary to observe, that the tumor in the latter is deeper; and that the ring of the abdominal muscles, which in this case lies above the swelling, in that of the inguinal kind, entirely surrounds the diseased part.

The event of this malady depends on the nature of the substance included. If the protruded parts be not timely reduced, the most fatal consequences, such as stricture, inflammation, and mortification, may be apprehended; though the portion of intestine, thus strangulated, be inconsiderable; but, if the caul alone be propelled, it is seldom attended with danger; because this membrane is not of such importance in the animal economy as the viscera and intestines.

Causes: As ruptures uniformly take place in consequence of local debility, it follows, that whatever may have such effect, will also occasion a protrusion of parts from their natural situation; for instance, all violent bodily exercise, singing, crying, lifting heavy burthens, quick and sudden motions, leaping, falling, &c. every forcible compression of the abdominal viscera by too narrow garments, such as stays, or waistbands. Hence soldiers, singers, dancers, porters, and women of difficult parturition, are very subject to this malady.—In children,

dren, it often proceeds from crying, obstruction of the bowels, flatulence, and the neglect of nurses. It has also been remarked, that the inhabitants of those countries where oil forms a considerable article of diet, are exceedingly liable to ruptures.

Cure: The first object should be to reduce the protruded parts, before a strangulation takes place. For this purpose, the patient must be laid on his back; the head being low, and the breech elevated by pillows. Warm fomentations of mild aromatic and emollient substances, such as chamomile-flowers, mallows, &c. are next to be employed; the effects of which will be greatly promoted by injecting a decoction of similar herbs with a table spoonful or two of sweet oil. After having persevered in these applications for some time, attempts should be made to reduce the tumor by gentle pressure; and, if this prove ineffectual, greater force must be used, yet so that the operator, while he presses with the palm of his hand, may re-conduct the projecting part with his fingers, through the same aperture through which it had been protruded, closely following its natural direction. Thus, if the hernia be in the groin or scrotum, the pressure must be made obliquely upwards and outwards; in femoral cases, it should be performed directly upwards; and umbilical ruptures are reposed by compressing them backwards.

The greatest benefit has been derived from the application of vitriolic æther to the swelling, so as to evaporate this volatile liquor by gradually dropping it on the part affected. If the patient be of a plethoric habit, copious bleeding becomes necessary; as it occasions

relaxation, and prevents inflammation. In order to preserve the part in its natural situation, and to prevent a relapse, after it has been reduced, a sufficient degree of pressure must be applied to the ruptured spot; an object which will be most effectually attained by a *spring truss*. This instrument is manufactured in a superior manner by Mr. SAVIGNY, of King-street, Covent-garden.

The reduction of umbilical ruptures, if timely undertaken, is mostly effected by the application of a bandage.—If, however, the treatment before stated, should not be attended with success, but the pain and other symptoms increase, recourse ought immediately to be had to a skilful surgeon; as procrastination may render the malady incurable.

RUPTURE-WORT, the *SMOOTH*, or *Herniaria glabra*, L. an indigenous perennial plant, which grows in gravelly soils, and flowers in the months of July and August.—This herb is, according to Dr. WITHERING, both saline and astringent; its expressed juice removes specks from the eyes; and, when taken internally, it is likewise said to increase the secretions by the kidneys.—BAUTSCH has employed it in tanning.—Cows and horses eat the plant; and, though rejected by hogs and goats, it is much relished by sheep.

RUSH, or *Juncus*, L. a genus of plants, comprising 36 species, of which, according to Dr. WITHERING 17, but in the opinion of Dr. SMITH 19, are indigenous: of these, the following are the principal; viz.

1. The *squarrosus*. See **MOSS-RUSH**.

2. The *conglomeratus*, **ROUND-HEADED**,
B 2

HEADED, or CLUSTER-FLOWERED RUSH, grows in moist meadows and heaths, where it flowers in the month of July or August. It is employed by the lower classes to form *rush-lights*, for which purpose it is peeled in autumn on three sides, and dipped in melted tallow. The soil producing this plant, generally contains a stratum of *peat*.

3. The *effusus*, **COMMON or SOFT RUSH**, or **SEAVES**, thrives in wet meadows and pastures; flowers from June to August.—It is eaten by horses and goats; is also used for *rush-lights*, like the preceding species; and sometimes manufactured into slight baskets.—The common rush is cut about Midsummer, in the vicinity of Farnham, and dried in the same manner as hay; after which it is formed into a kind of *now*, and sheltered till the succeeding spring, when, on account of its toughness, it is usefully employed for bands, or ties, in fastening hops to the poles.—In a fresh state, it is farther converted into brooms, or besoms, for blacksmiths, and other artisans working in metals.

All the species of Rush grow in wet situations, and have therefore been sown on the banks of canals, in order to consolidate the earth. But, as they frequently abound on lands, that would otherwise be productive, different means have been adopted, with a view to extirpate them. This purpose has been attained by ploughing one furrow, and harrowing in a considerable quantity of dung; after which a crop of oats, is taken. Another method consists in pulling them out by the roots in July, and exposing them for two or three weeks, till tolerably dry. They are then gradually burnt, and their ashes

spread on the land, thus affording an excellent manure.—But, in order to prevent their future growth, the ground ought to be drained; and, if any rushes appear, they must be annually eradicated, and the soil properly rolled.

RUSH, the **FLOWERING**, or **WATER GLADIOLE**, *Butomus umbellatus*, L. a native perennial plant, growing in slow streams and muddy ditches; flowering in the month of June or July.—This beautiful herb is a great ornament to the banks of our rivers and marshy ditches: it is refused by every species of cattle. From its strong leaves, the Dutch manufacture a kind of carpets and tapestry that are highly prized; and BÖHMER observes, that they may also be converted into baskets, for packing fruit and other commodities.

RUSH, the **HARE'S-TAIL**, or **SINGLE-HEADED COTTON-GRASS**, *Eriophorum vaginatum*, L. a perennial plant, found in marshy heaths, on bogs and moors; principally in the northern counties of Britain.—The whole plant, previously to its flowering in June, is eaten with great avidity by sheep; and it is asserted by shepherds, that these animals will, after being reduced by hunger, recover more speedily, and thrive much better on the hare's-tail rush, than on turnips. In a ripe state, however, it is chiefly used for *rush-lights*: the wool, or, down growing on this plant, though short and brittle, may be applied to similar purposes with those of the **COTTON-GRASS**.

RUSH-GRASS, the **PRICKLY**, or **LONG-ROOTED**, *Schoenus Nivale*, L. a native plant, which grows in marshes, ponds, and bogs, where it flowers, in the months

months of July and August.—This species is injurious to cows. It frequently abounds in pools to such a degree, as to form floating islands by its interwoven roots: the stalks attain from two to six feet in height, and are principally employed as a substitute for straw in thatching houses; for which purpose they are better adapted.

RUST, denotes the calces, or vulgarly the flowers of metals, which are generally produced by exposure to moist air, or in damp situations; though the former may also be obtained artificially, by corroding or dissolving metals, in a proper **MENSTRUUM** (which see); and in which case it is termed a **magistery**.

Having already pointed out (vol. iii. p. 30), a few general methods of preserving iron from rust, we shall, at present, only add a receipt by which the latter may be removed. It consists in combining a certain proportion of quick-lime with mutton fat, into balls, which must be rubbed on the utensil, till it has entirely obliterated the rust: after this coating has remained for a few days on the metal, it is removed with coarse flannel or other rags; when another composition, made of equal parts of charcoal, red calx of vitriol, and drying oil, is applied by continued friction, till the surface be restored to its pristine brightness.

RUST, or **RUBIGO**, in vegetable economy, is a disorder affecting certain plants. It consists of a ferruginous powder scattered beneath the leaves, principally of the Ladies-mantle, Stone-bramble, and Ragwort, especially if these vegetables grow in a burnt, woody soil.

Dr. DAWSON conjectures the rust to be a fungus, similar to the

MILDEW, which resembles certain kinds of liverwort, and grows beneath the leaves of plants that are previously diseased. He conceives that it may be prevented, or destroyed, by exposing such vegetables to greater light and ventilation, in the manner already described, vol. iii. p. 198.

UTA-BAGA. See **TURNIP**.

RYE, or *Serale*, L. a genus of exotic plants, comprising five species, one of which only is raised in Britain, namely, the *Cereale*, or Common Rye. It was supposed by LINNÆUS to be a native of the Isle of Candia, whence it is said to have been introduced into Britain; but it is doubtless a northern plant, as it thrives and flourishes most luxuriantly in cold climates.

The common rye is divided into two varieties, viz. the Spring, White, or Silvery Rye; and the Winter, or Black Rye. Both are propagated from seed in the proportion of 2 or 2½ Winchester bushels per acre, generally on poor, dry lime-stone, or sandy soils, where wheat does not thrive; and, if it be sown on such lands two or three successive years, it will at the end of that period ripen a month earlier than such as has, for a long series of years, been raised from strong, cold ground.

The proper season for committing the seed to the earth, depends greatly on the nature of the rye: that for spring or white grain, is from February to March; as that for the black or winter rye, is from the middle of September to the latter end of October, in South Britain. Both these varieties, however, are advantageously sown together with wheat, at the rate of one peck of rye with one bushel of wheat: the seed of the former

is also harrowed in among a thin crop of turnips, and both are *fed off* with sheep.

Formerly, considerable quantities of rye-meal were converted into bread; sometimes being kneaded alone, and occasionally with a small portion of wheaten flower. It is, however, seldom used at present in this country, on account of its being subject (especially during hot summers that succeed a wet spring) to a disease, known in France under the name of *ergot*; but which is called in England, *horned rye*, *spur*, or *horn-seed*. The grain thus affected grows out into large horns, containing a mixture of black and white farinaceous powder; and is said to appear as if it were pierced by insects, which are conjectured to cause the disease. By the use of such damaged grain, the poorer classes of people, both in France and England, have often been afflicted with fatal disorders, accompanied with extreme debility and gangrene, or mortification of the extremities. *Horned rye* is equally fatal to brutes: sheep, dogs, swine, deer; nay, geese, ducks, and other poultry, that were fed with it, by way of experiment, became violently convulsed, and died in great agonies. So deleterious, indeed, are its effects, that it has even destroyed the flies which settled upon it.

But though rye, when diseased, be thus prejudicial to men and ani-

mals, yet in a sound state it is an excellent grain for bread-flour, and often yields abundant crops. It may also be advantageously *fed off* early in the spring by sheep, and somewhat later with horses and cows; or, it may be mown and given to the latter in the stables.—The straw of this grain is excellent for thatching, and is also used by brick-makers, collar-manufacturers, and for packing. Farther, we are informed by Mr. MARSHALL, that in the county of York the farmers always sow a small quantity of rye with their wheat, which they believe is thus preserved from the injurious disease, known under the name of *Mildew*. Lastly, every kind of poultry have such an antipathy to this grain, that they avoid the place where it vegetates: hence it has been advantageously sown in *head-ridges*, around farm-houses, and yards, as a kind of protection to other grain.

With respect to its physical properties, we shall only remark, that pure and sound rye, though less nutritive than wheat in a similar condition, affords good bread; which, to persons of a sedentary life, is attended with the beneficial effect of preventing costiveness, or obstipation of the bowels.

RYE, the Wild. See BARLEY, the Wall.

RYE-GRASS. See DARNEL, the Red.

S.

SADDLE, a kind of stuffed seat, fastened to the back of a horse, for the convenience of the rider.

Saddles are divided into various kinds, according to the purposes for which they are designed; such

as *hunting-saddles* for the chace; *side-saddles* for females, &c. Numerous accidents, however, happening, either from the spirited and turbulent disposition of horses, or the inability of riders to keep their seat in a proper and steady manner, ingenious artists have contrived means of preventing such misfortunes. Among these, we shall mention Mr. EDW. JONES's Woman's Saddle-tree, with a spring head; for the invention of which he obtained a patent, in May 1794. He constructs the *near side* head, or horn of the saddle-tree, so as to drop down by means of a steel, iron, or other spring; and, when the rider wishes to dismount, by pushing the head or horn from her, it will instantly fall, so that she may alight without danger, in case the horse should take fright, or run away: thus, her clothes will never be entangled in the horn, and all farther inconvenience arising from the common mode of constructing saddles, will be effectually avoided. Such spring may also be weakened, or strengthened, according to the ability of the rider, by means of certain screws; which, being turned or admitted into the upper part of the near point, prevent the head from falling, contrary to her inclination or pleasure.

In May 1801, a patent was granted to Mr. WALTER INGLISS, for a method of making saddles, on a new and improved plan, by which the rider is enabled to perform longer journeys on a *rough-trotting* horse, with greater ease than on any other saddle hitherto constructed; and also for contriving the stirrup-bars in such a manner, that if a rider happen to fall from, or be thrown off his horse,

he will, in consequence, be immediately disengaged. This invention consists in giving elasticity to the seat of the saddle, by introducing a spring into the long *straining web*; and in attaching the stirrup-bar to the saddle, by means of a bolt connected with the rider, in such a manner, that, on falling off, or being thrown, he draws the bolt or fastening, and the stirrup is parted from the saddle. For a minute account of this patent, the reader will consult the 15th vol. of the *Repertory of Arts*, &c. where a full specification is given, and illustrated with an engraving.

SAFFLOWER, or BASTARD-SAFFRON, *Carthamus*, L. a genus of exotic plants, comprising ten species, the principal of which is the *tinctorius*, Common or Dyer's Safflower. It is a native of Egypt, and the warmer climates of Asia; is cultivated to a considerable extent in various parts of Europe, and particularly in the Levant; whence considerable quantities are annually imported into Britain.

The Safflower is propagated by the seed, early in the spring, sowing it separately in drills, at the distance of two feet and a half from each other. In the course of a month, the young plants will appear, and at the expiration of a similar period, it will be necessary to hoe the ground, leaving them six inches apart. A second hoeing will likewise be proper, when the plants should be thinned to the distance at which they are intended to remain. If the soil be stirred a third time, no farther attention will be required, till the flowers appear: the small blossoms, which form the compound flowers, ought to be cut in succession, as they attain to maturity: and then gradu-

ally dried in a kiln, of a moderate heat. In order to procure seed for a future crop, some of the plants should be left, till they are perfectly ripe; but BECKMANN advises not to choose any of the prickly plants for such purpose; as they will re-produce very small flowers. He farther observes, that the Safflower growing in Germany, might be fully equal to that imported from Turkey, if similar pains were taken in drying and preparing the flowers, previously in salt-water, as well as in choosing the proper soil. In the latter respect, agricultural writers are not agreed; for, in rich land, the plant seldom flowers till late in autumn; while, in a poor dry ground, it is in bloom at an earlier period; but the flowers are smaller, and yield a less portion of colouring matter. On the whole, a moderately dry and well-manured soil, appears to be best adapted to its culture, especially if it be sown early in February; as the young plants are not liable to be injured by the vernal frosts.—The dry leaves of this vegetable are, in the winter, eagerly eaten by sheep and goats.

The flowers and seeds of the bastard saffron were formerly often used medicinally; but, at present, they are nearly exploded, and the former are principally employed for dyeing linen, woollen, silks, and especially cotton, which absorbs the tinging particles more easily, and retains the volatile hue of the safflower much longer, than any other stuff. This plant produces a variety of shades, from a bright-yellow to a deep-red, accordingly as it is treated with the addition of alum, pot-ash, cream of tartar, lemon-juice, or oil of vitriol, in due

proportions.—It pays, on importation, a duty of 1½d. per lb.

SAFFRON, or *Crocus*, L. a genus of plants consisting of seven species, two of which are indigenous: namely,

1. The *sativus* v. *officinalis*, COMMON, or AUTUMNAL SAFFRON, thrives in meadows and pastures; flowers in August and September. It is cultivated by planting out the roots in July, at the distance of five inches apart, and two inches deep, in a good, dry soil, that has previously been well ploughed, and manured with rotten dung.

In the beginning of September, the ground ought to be hoed, and the weeds carefully eradicated; as the growth of the saffron would otherwise be impeded. A short time after, the flowers will appear for several weeks; and they should be gathered, that is, the stigmata or fleshy summits of the pistils picked off, every morning in succession, before they are fully blown. Next, these tender filaments are to be gradually dried in a kiln, and preserved for use.—A field of saffron will continue to be productive for three or four years, yielding progressively more numerous and larger flowers, as well as an increase of bulbous roots; which, after that period, may be advantageously transplanted to another situation.

Saffron is remarkably fragrant, and is highly esteemed; as it exhilarates the spirits, when taken in small doses; but, if used in too large portions, it produces immoderate mirth, and all the consequences resulting from the abuse of spirituous liquors. It imparts a beautiful colour to water, wine, or spirits,

spirits, to which it communicates its virtues.

This drug was formerly considered an excellent remedy in hysterical depressions, originating from spasms, or from obstructions of the usual evacuations; but, in modern practice, it is seldom employed, though it forms an ingredient in several medicinal preparations. The best saffron is that raised in England, which may be known by the breadth of its blades: it ought to be of a deep red or orange colour; fresh and tough, though neither too dry nor too moist; and of a strong, but pleasant aromatic odour.—It deserves to be more generally known, that mercenary dealers often adulterate this valuable spice with *safflower*, or with the fibrils of dried *beef*: the former practice, which is more common and less troublesome, cannot be easily detected; but the latter species of fraud may be ascertained by infusing a few threads of suspected saffron in a wine glassful of simple water; and if, after standing 24 hours, the liquor acquire only a pale-yellow tint, instead of a bright-red hue, it may be concluded that it is not genuine.—On importation, it pays 2s. 9d. per lb.

2. The *vernus*, SPRING or GARDEN CROCUS, is found in meadows, chiefly in the county of Nottingham: it flowers in the month of March.—This species is propagated by seeds in gardens, for the beauty of its flowers, which form a principal ornament in vernal nosegays.

SAFFRON, the Meadow. See MEADOW-SAFFRON.

SAGE, or *Salvia*, L. a genus of plants comprising 60 species; of

which the following are the principal, viz:

1. The *Pratensis*; and,

2. The *Verbenaca*. See CLARY.

3. The *Officinalis*, or COMMON LARGE SAGE, is a native of the southern parts of Europe, and cultivated in British gardens, for culinary purposes.—There are several varieties of this species, namely, the common green sage, the wormwood sage; the green and red sage, both with variegated leaves; and a peculiar kind with red or blackish leaves; the last of which is most commonly cultivated, together with the wormwood-sage.—Their flowers furnish bees with honey and wax; the whole plant is exceedingly grateful to sheep, and imparts a delicate flavour to the flesh of these animals.

4. The *toментosa*, or BALSAMINE SAGE, which is preferred to all the other species for *herb-tea*.

All the different kinds of sage may be propagated by seeds; but, as some of these useful plants do not attain to perfection in this country, the more eligible method of raising them, is generally by *slips*.

In a medicinal view, sage moderately warms and strengthens the alimentary canal: hence, in cold phlegmatic habits, it excites appetite, and may be of service to persons labouring under nervous debility. The best method of taking it, is by an infusion of the dry leaves used as common tea; or a tincture, or extract, made with rectified spirit, and given in proper doses. These preparations contain the whole virtues of the sage, while the distilled water and essential oil possess only the warmth and aromatic

matic quality, without any of its bitterness or astringency. Watery infusions of the leaves, with the addition of lemon-juice, form an useful drink in febrile disorders, and are very grateful to the palate.

SAGO, is the medullary substance obtained from a species of the Palm-tree (*Cycas circinalis*, L.), a native of the Molucca and other islands of the East Indies. It is used as bread by the natives, who macerate it in water, and form it into cakes. The grains of Sago sold in the shops, are prepared in a manner similar to those of *Tapioca* (see CASSAVA): they furnish a nourishing and agreeable jelly with water, milk, or broth; but they should be previously cleaned; and, to dissolve them completely, the first decoction should be strained, and afterwards boiled a second time, for about half an hour. With a view to render it more agreeable, a small portion of lemon-juice, sugar, and wine, may be added. In this state, it forms an excellent dish as a restorative, particularly for the consumptive, convalescent, and those whose digestion is weak or impaired; but the coarser parts, which remain after straining the liquor, should not be eaten; as they are too flatulent for the stomach of invalids, and afford little nutriment. In phthisical cases, a decoction of sago in milk, will be the most proper; for wine and broth can be allowed only to patients who are free from febrile symptoms.

SAIL-CLOTH, a strong texture, made of hemp, for the purpose of supplying ships with sails.—Although considerable quantities of this valuable article are annually manufactured in Britain, yet as they are not only inadequate to the demand for the navy, but, being

subject to the mildew, are consequently less durable than the sail-cloth imported from North America, we shall state the following expedient, adopted in that country, by which the cloth may be greatly improved. It simply consists in moistening the warp, in the loom, with a decoction or gelatinous substance prepared from the refuse of neats'-feet (after the oil is expressed), which is boiled in water, till it is converted into a kind of glue. The weavers of this article, in Britain, employ a paste made of flour and water, which necessarily renders the cloth brittle; whereas, by using the animal preparation above mentioned, the sail-cloth will not only be rendered more durable, but the expence may be lessened, and an article, that is at present thrown away, may thus be usefully employed.

SAINTFOIN, the COMMON, or COCK'S-HEAD, *Hedysarum Onobrychis*, L. a native perennial plant, which grows in meadows and pastures, on chalky soils, where it flowers in the months of June and July. There are several varieties, known under the names of White-flowered, Blue-flowered, Purple-flowered, Striped-flowered, and Long-leaved Hoary Saintfoin.

This plant thrives most luxuriantly on dry and chalky lands, in high and exposed situations, so that its culture would chiefly benefit the Northern parts of Britain; for it requires no rich land, but a clayey and gravelly bottom.—It is propagated from seed; the best of which has a bright husk; the kernel being plump, externally of a grey or blueish cast, but when cut, internally of a fresh greenish colour.

The proper season for sowing the

the Cock's-head, is in the month of March; the quantity of seed varies, from one to four, and even eight bushels per acre, broad-cast; though the most economical method is that of drilling it in rows two feet asunder; by which half a bushel is sufficient to stock an acre. This vegetable is, however, occasionally sown together with clover, or with barley, in the proportion of from one to three bushels per acre, to which 5lbs. of trefoil are generally added; as the latter prevents the growth of weeds, till the saintfoin has taken deep root.

This species of clover is one of the most promising plants, which might be cultivated in Britain; and it is much to be regretted, that its introduction should be almost totally neglected by so many tenants or proprietors of poor, shallow, and stony soils; as it will produce, on their worst lands, at least one ton of hay, together with a considerable after-growth for grazing cattle. Saintfoin, indeed, will yield abundant crops for ten or fifteen years, at the expiration of which, it will afford an excellent pasture for sheep, during several succeeding years; and, if the soil be rich, it will produce two crops annually; except, however, in the first two or three years, when the growth seldom exceeds one load, or half a crop per acre: but no cattle should be suffered to graze on it, for the first winter; as their feet will injure it: nor should any sheep be fed on it during the second summer; because they are apt to bite the crowns or tops of the roots, the growth of which would thus be immediately checked.

At the expiration of seven or

eight years, it will be proper to manure the soil with dung; and, if it be sandy, with marle. Should the first season for mowing prove wet, the saintfoin must be left for seed; it ought not, however, to be cut before it is in full bloom; as the quality of the hay would thus be materially injured; but, if it be given to cattle, while green, it will produce a second crop in the same year. Whether it be consumed in a fresh or dry state, it is equally useful for feeding cattle, and is said to fatten sheep more speedily than any other vegetable. It is farther believed to increase the quantity and improve the quality of milk in cows, the cream of which becomes not only richer, but the butter acquires a better colour, and more delicious flavour. Lastly, saintfoin is an uncommonly strengthening provender for horses, which, when fed with it, require no oats.

SAL-AMMONIAC. See AMMONIAC.

SALAD, in general, signifies a dish of raw or fresh esculent herbs, which are usually seasoned with salt, vinegar, oil, and mustard; to these condiments are sometimes added hard-boiled eggs, sugar, pepper, and other spices.

The vegetables constituting the principal part of British salads, are lettuces, endive, cresses, celery, radishes, &c. respecting the culture and properties of which, the reader will find an account in the progress of this work. To these may be added, purslane, corn-salad, chervil, spinach, and other plants, which are known under the name of *small herbs*, and should always be cut, while in the *seed-leaf*.

Salads are very wholesome, and contribute to purify the blood, as well as promote digestion, provided they

they be eaten *without oil*: hence they are, or ought to be, prepared for the table together with all kinds of roasted meat; and, if they happen to be frozen, or frost-bitten, during severe winters, they should be immersed in spring water for two or three hours, previously to being used; by which expedient their fresh taste and colour will be completely recovered.

SALEP, a nutritious preparation obtained from two species of the ORCHIS.

Different methods have been proposed and adopted, with a view to procure this nourishing substance; but the most simple is that of Mr. MOULT, already described vol. iii. p. 316. We shall, therefore, only observe, that *Salep* might thus be prepared and sold at the low price of eight or ten pence per pound; and, as it is supposed to contain the largest portion of vegetable nutriment in the smallest compass, its powder has been recommended to form part of the provisions of every ship. Farther, salep possesses the valuable property of concealing the saline taste of sea-water, and retarding the acetous fermentation of milk. Hence Dr. PERCIVAL is of opinion, that it may be advantageously used in milk-porridge, especially in large towns, where that fluid is generally acescent, in consequence of the cows being fed with sour grains, and similar acid food.

Beside the particular cases (stated under the article ORCHIS), in which this preparation is very useful, on account of its mucilaginous and restorative properties; salep is likewise of essential service in the *sea-scurvy*, as it obtunds the acrimony of the fluids, while it easily assimilates into a mild and salubrious

chyle. Lastly, if administered in considerable portions, it is, according to Dr. PERCIVAL, an "admirable demulcent" in symptomatic fevers, which are occasioned by the absorption of pus or matter from ulcers in the lungs, from wounds, or after amputations; as it is eminently adapted to resist the dissolution of the *crasis*, or due mixture of the blood in the human body, and which generally takes place in such cases.

SALIVA, a term applied to the fluid, with which the mouth and tongue are continually moistened: it is secreted by the *salivæ glands*.

This humour is thin and transparent; it cannot be reduced to a concrete form by fire, and is almost totally divested both of taste and smell. It is supplied from the glands by mastication; and, being intimately blended with the aliment, essentially contributes to its digestion; serving also to improve the taste of food; to mix with, dissolve, decompose the nutritive matter into its principles; and to moderate thirst.

The saliva of hungry persons, and of such as indulge in violent passion, is extremely acrid, penetrating, and profusely discharged. But, if this fluid be evacuated too copiously; for instance, by those who indulge in smoking tobacco, it excites thirst, and occasions loss of appetite, indigestion, and at length atrophy, with all its attendant evils. On the other hand, if it be swallowed, together with the oil deposited on the tongue from the fumes of that narcotic herb, its effects are alike pernicious. Nor is it advisable to absorb the saliva in sick-rooms, or places where malignant disorders prevail; because the contagious *miasma* might thus be introduced into

into the body, as well as by actual contact.—See also CONTAGION, and INFECTION.

SALLOW, or WITHEW, *Salix caprea*, L. is an indigenous species of the willow, which, though it will vegetate in damp situations, requires a drier ground than any other of that genus. In a good soil, it attains the height of thirty feet.—The tender shoots and suckers of this tree are, on account of their flexible nature, useful for baskets and wicker-work.—In Sweden, the young rind is not only employed with advantage by tanners, but also by dyers, for striking a deep black on linen-yarn, in combination with alder-bark. The former has likewise been profitably converted into PAPER.—See vol. iii. p. 335.

SALLOW-THORN. See BUCK-THORN, the Sea.

SALMON, or *Salmo*, L. a genus of fish comprising twenty-nine species, of which the following are the principal, viz.

1. The *fario*. See TROUT.
2. The *alpinus*. See CHARR.
3. The *eperlanus*. See SMELT.
4. The *salar*, or COMMON SALMON, inhabits the British seas and rivers, where it is caught in great numbers, the largest weighing from 30 to 40 lb., though sometimes upwards of 70. These fish form, in several countries, a considerable branch of commerce, and are cured in various ways, by salting, pickling, and drying. Hence, in Iceland, Norway, and the Baltic, as well as at Coleraine in Ireland, at Berwick-upon-Tweed, and some of the Scotch rivers, certain stationary fisheries are established, which prove uncommonly productive.

The salmon frequents both salt

and fresh waters, quitting the former in the spring, for the purpose of depositing its spawn in the gravelly beds, remote from the mouths of rivers. Towards autumn, they again resort to the ocean.

Salmon is a very general and favourite article of food, and is used at the table, either *fresh*, *cured*, or *smoked*; in which last state, however, it is exceedingly unwholesome. The flesh of salmon, while fresh, is tender, flaky, and nutritive; but, being rather oily, it is difficult of digestion. In the spawning season, its flavour and tint are much impaired: when boiled or salted, it acquires a fine red colour. Those of a moderate size and middle age, are in the greatest perfection, both with respect to their taste and salubrity.—Salmon-trout are chiefly distinguished from the common fish of that name, by their soft and gelatinous nature.

SALT is one of the component parts of animal, vegetable, and mineral bodies. It may be distinguished from other matters, such as earths, by its solubility in less than 200 times its weight of boiling water; by affecting the organs of taste; and being capable of crystallization, either by itself, or in combination with several earths or alkalies.

Salts are divided into two principal classes, namely, *acid* and *alkaline*: from the mutual combination of both, there is formed a third kind, known under the name of *neutral salts*.

I. *Acid salts*, possess a sour taste, and change the blue colour of vegetable pigments into red. They are divided, according to the three kingdoms of Nature, into *vegetable*, *animal*, and *mineral*; but,

but, having already given an outline of this distinction (vol. i. pp. 10, 11), we must refer the reader to the principal acid salts, under their alphabetical heads.

II. *Alkaline Salts.* See ALKALIES, BARILLA, PEARL-ASH, POT-ASH, and SODA.

III. *Neutral Salts,* are such as are obtained from a combination of acids and alkalies.

The principal and most useful of this class is, the *Common* or *Sea-salt*. It differs from all other neutral substances of this nature, in its taste being purely saline, and occasioning thirst, after it has been swallowed. The primitive figure of its crystals is that of a cube; but, on evaporating a solution of salt, the smaller cubic particles assume the secondary form of hollow squares. When the crystals are perfectly pure, they are not affected by moist air; and, in this state, 100 parts contain, according to BERGMAN, 52 of muriatic acid, or spirit of salt; 42 of soda, or mineral alkali; and 6 of water of crystallization; though we believe, with GREEN, that the proportion of the fluid part is greater, and that of the two first ingredients somewhat smaller. Nature furnishes us with this neutral salt, either in a solid state, in mines; or dissolved in the sea; or in saline springs.

If it be obtained from the bowels of the earth, it is called *Rock-salt*; and is generally very hard, and transparent, though it is sometimes opaque, white, and sometimes of red, green, blue, or other shades. The purest of this kind is colourless; the other species are purified by solution in water, and by re-crystallization, before they can be employed for culinary purposes. The principal

mines of Rock-salt are in the vicinity of Cracow, in Poland, and at Northwich, in the county of Cheshire.

The salt, however, which is thus easily procured, and in very large masses, by no means affords a sufficient supply: hence numerous persons are employed in extracting it from *sea-water*, or from *saline springs*. The former yields only from one-50th to one-30th part of its weight, but the latter produce the greatest quantities; and we are informed by Dr. BROWNING (*Art of Making Common Salt*, &c. 8vo.), that the celebrated saline springs of Northwich, Nantwich, and Droitwich; in Cheshire (whence Great Britain is principally supplied), contain more than one-sixth part of good salt.

Common salt is obtained from these natural solutions by two different methods: First, the saline fluid is speedily evaporated, till the salt begin to concrete, and settle in the form of grains at the bottom of the pans; after which it is put into proper vessels for draining the brine; and, when the process is completed, it is called *bay-salt*. By the second method, the evaporation is slow and gradual; so that it is continued only till a saline crust is formed on the surface of the liquor; which soon shoots into crystalline cubes.

In the first volume of the *Transactions of the Royal Society of Edinburgh*, we meet with a memoir, by the Earl of DUNDONALD, containing an account of a new expedient of purifying sea-salt. He observes that the common salt is mixed with various substances, which in a great measure render it unfit for the important purpose of preserving

ing food; and which appear from his experiments to be nauseous, bitter, and cathartic salts, with earthy bases. And, as the mode of purifying salt by dissolution in water, and precipitation of the earthy matters with fossil alkali, is not only too tedious, but also too expensive for common use, Lord D. proceeds on the fact, that *hot* water, when saturated with sea-salt, will still dissolve some portion of bitter salts. He, therefore, directs the small end of a funnel, or similar vessel, which is perforated, to be placed downwards; filled with sea-salt, and kept in a moderate heat. One 20th part of such salt is now to be dissolved in the smallest possible quantity of boiling water, which must be poured into the cone, that contains the remaining 19 parts. The boiling water, being thus saturated, will not take up any more salt, but liquefy a considerable part of the bitter, earthy, or saline particles, which consequently will ooze out at the hole. When this solution ceases to drop, the process must be repeated, by using fresh portions of the same parcel of salt thus partially refined, till the requisite degree of purity be obtained. Lord DUNDONALD is of opinion, that three washings will render the British salt much purer than that obtained from any other country:—the superiority of such salt is evident both to the taste, and for its effects in preserving animal food and butter. This is an object of the greatest importance, and from the simplicity, facility, and cheapness of the above stated process, we trust it will shortly be introduced into more general practice.—Various other, though more complicated attempts, have lately been made by private

individuals, to expedite and improve the preparation of salt, as well as to decompose it with a view to extract the *soda*: among these, we shall mention only the following patents: namely, Mr. GEORGE HODSON's, obtained in August, 1792, for his new method of separating fossil alkali from common salt; and also of separating the same substance from kelp; his second patent, granted in February, 1797, for an improved mode of effecting the same object; and likewise of extracting the mineral alkali from the muriatic acid, contained in rock-salt, common salt, brine, &c.;—Mr. JAMES MANLEY's patent, dated July, 1801, for various improvements in the process of manufacturing salt. As, however, these different processes would not be generally interesting, and could be understood only by the aid of engravings, the inquisitive reader will consult the 2d, 10th, and 15th volumes of the *Repertory of Arts*, &c.

Uses: The value of salt for culinary purposes is well known: it is likewise of peculiar service in preserving the health of cattle (see vol. i. p. 466-7), and particularly in preventing that most fatal disorder in sheep, the *rot* (see vol. iii. p. 510-11). Besides, salt is an excellent MANURE; as it is equally destructive to weeds and vermin: the most accurate proportion appears to be *sixteen bushels per acre*; but, if that quantity be exceeded, or doubled, it will produce effects diametrically opposite to those intended, and completely check vegetation.

With respect to its medicinal properties, common salt, when taken in small quantities, promotes the appetite and digestion; but, if given

given in large doses, for instance, half an ounce, it operates as a laxative. It deserves, however, to be remarked, that its useful properties are greatly changed in a state of intimate combination with animal matters: thus, salt-butter and salt-meat, or fish, are less wholesome than those substances when eaten in a fresh state, with a due portion of that domestic spice; nay, if used too frequently, the former often lay the foundation of tedious maladies, such as leprosy, scurvy, and other cutaneous eruptions.—Lastly, salt is sometimes administered with a view to restrain the operation of emetics, or to carry them off by stool; and likewise as a stimulus in clysters.

A new species of *neutral salt* has lately been discovered in France, an account of which we have abstracted from M. CHAUSSIER's Memoir, inserted in the 37th No. of the "*Recueil Periodique*," a Medical Journal published at Paris. This new salt is the *sulphurated hydro-sulphur of soda*, and is formed spontaneously in manufactories where the sulphate of soda, or GLAUBER'S SALT (which see) is decomposed, by being melted in a reverberatory furnace, with a certain portion of iron filings, and carbon or charcoal. Our limits will not permit us to state the whole of this process; we shall therefore only observe, that the sulphurated hydro-sulphur of soda is found in the leys which remain, after the carbonate of soda has been obtained by ebullition. Such leys being suffered to stand for some time, a crystallization takes place in the residuum; and the crystals appear of a dusky yellow colour, being sometimes sealed, or tinged with a black powder, adhering to their surface: these

are next thrown into a proper quantity of water; and, when almost dissolved, the fluid is strained and deposited in a cool place, when the saline matter will again be crystallized. Thus purified, the salt forms large transparent crystals, having a fresh taste, which speedily becomes somewhat bitter: it retains its form and properties on exposure to the air, neither deliquescent, nor crumbling into powder.

M. CHAUSSIER has successfully administered this neutral salt in cases of inveterate herpetic affections, which were not accompanied with fever or inflammation: he observes, that it may also be prescribed in certain intestinal diseases, occasioned by metastases, or the repulsion of a psoric and scorbutic virus.—The doses must at first be small, and gradually increased; while the efficacy of the drug may be promoted by diluents, or such drinks as are best calculated to alleviate the situation of the patient.

SALTING MEAT. See BEEF; BRINE; FLESH-MEAT; PICKLE; PORK, &c.

SALTPETRE, or NITRE, a concrete saline matter, the nature and properties of which have already been stated, vol. iii. p. 269. —Without entering into the particulars relative to the most economical method of manufacturing this useful salt, we shall briefly point out the requisites to its generation: 1. Animal and vegetable matters intimately blended, and exposed to a moderate temperature; 2. Such a degree of moisture, especially with urine in which nettles, thistles, artichokes, and similar plants, have been boiled, as will promote corruption, without

without inducing actual putrefaction; 3. The earth employed ought to be of a loose and porous texture; for instance, the clay of old mud-walls, or a due admixture of chalk, quick-lime, &c.; 4. A sufficient length of time, namely, from six to twelve months, and upwards; as, otherwise, a very small quantity of *nitre* will be obtained by crystallizing the ley made of the *saltpetre-rot*, or the earth after it has been exposed to the influence of the atmosphere in triangular beds, under proper sheds.—The manner of extracting such earth is exceedingly simple and easy, by means of tubs with numerous holes at the bottom, lined with straw, over which the mould is placed in alternate strata; with a little pot-ash either strewed between them, or dissolved in the boiling water, which is gradually poured over the solid materials: there is nothing farther required, than proper wooden pails with transverse sticks, in which the liquor, after evaporating it to a proper consistence, is poured and suffered to stand for several days, slightly covered, till the crystals are formed. The remaining fluid, or *mokier-ley*, is again to be boiled, and poured over a new portion of the earth taken from an old nitre-bed, so that none of it may be wasted.—Such is the process that is generally followed in the most profitable saltpetre-works of Germany.

Though nitre affords one of the most extensively useful articles in the arts and manufactures (see *AQUA-FORTIS*), as well as in medicine, yet this powerful salt, when inadvertently taken in too large quantities, is one of the most fatal poisons. There are several attest-

ed cases on record, in which from half to a whole ounce of saltpetre has occasioned violent vomiting, convulsions, swelling, and other painful symptoms in persons who, by mistake, had swallowed it in a dissolved state, instead of Glauber's, or similar salts.—The most proper antidotes, in such distressing situations, will be a scruple or half a dram of ipecacuanha with a tea-cupful of sweet-oil, and a large quantity of warm water to be drunk after it, to promote its operation as an emetic. Where this remedy cannot be procured on the spur of the occasion, it will be necessary to make use of copious and frequent draughts of mucilaginous decoctions of marsh-mallows, pearl-barley, salep, or arrow-root powder, sago, tapioca, &c. after which a gentle opiate will afford the desired relief. In all instances of this nature, however, it will be advisable immediately to resort to medical advice.

SALTWORT, or GLASSWORT, *Salsola*, L. a genus of plants comprising nine species, of which two are indigenous: namely,

1. The *kali*, **PRICKLY SALTWORT, or KELFWORT**, grows frequently on sandy sea-shores, and flowers in the months of July and August.

2. The *fruticosa*, **SHRUBBY SALTWORT, or SHRUB STONE-CROP**, thrives likewise on sandy sea-shores, and flowers in the month of August.

Both these species are used for making the salt known under the name of *kali*, considerable quantities of which are employed in the manufacture of glass.—The process is as follows: A trench being dug near the sea, laths are placed across it, on which the herb is laid in

C

heaps;

heaps : a fire is then kindled below, and the liquor extracted from the plants, drops to the bottom, where it ultimately acquires a thick consistence, when it becomes kali ; which is partly of a black, and partly ash-colour ; very sharp and corrosive : being of a strong saline taste. When thoroughly hardened, it resembles solid stone, and in that state is fit for use.—See KELP, vol. iii. p. 45.

SALTWORT, the **JOINTED**, or *Salicornia*, L. a genus of plants, comprising nine species ; one of which only, according to Dr. WITHERING, but, in the opinion of Dr. SMITH, two, are natives of Britain, viz.

1. The *herbacea*, **JOINTED GLASSWORT**, **SEA-GRASS**, or **MARSH SAMPHIRE**, is very common on sea-shores, and flowers in the months of August and September.

2. The *fruticosa*, or **SHRUBBY SAMPHIRE**, grows likewise on sea-shores and the sides of roads, where it flowers from August to September.

The ashes of both these species yield fossil alkali, which is in great request for manufacturing soap and glass. It is chiefly prepared on the Mediterranean coast, and is called *soda* ; the best of which is imported from Spain, under the name of *barilla*.—When young and green, this vegetable, steeped in vinegar, with a due portion of salt, affords a pickle very little inferior to samphire.—The whole plant has a saline taste, and is devoured with avidity by all kinds of cattle, being a very wholesome food, especially for sheep.

SALTWORT, the **BLACK**, or **SEA MILKWORT**, *Glaux maritima*, L. a native perennial plant, which grows in salt-marshes, and flowers

in the months of June and July.—This saline plant is often used as a pickle, and may likewise be eaten as salad, or cooked among other vegetables.—It is also much relished by cows ; and BECHSTEIN observes, that it uncommonly increases their milk ; on which account it merits to be cultivated in congenial soils.

SAMPHIRE, the **ROCK**, or **SEA SAMPHIRE**, *Crithmum maritimum*, L. a perennial plant, growing on the British Sea-coasts, among gravel and rocks, where it flowers in the month of August.—This vegetable is much relished as a pickle, and likewise employed as a pot-herb.—Dr. WITHERING informs us, that sheep and cows eat it with avidity, and have, in consequence, been observed to grow exceedingly fat.

SAND, a genus of fossils, consisting of small grains of siliceous stones, which are insoluble both in water and acids ; being transparent, and vitrifiable by intense heat. They are mixed with various matters, when they acquire different colours ; and are divided into white, red, yellow, brown, blackish, and green sands.

This fossil is of extensive utility in the manufacture of glass ; a fine white sand, found in the vicinity of Lynn, Norfolk, being employed for making white glass ; and a coarse greenish sand for the common green or bottle-glass. It is likewise an excellent manure for clayey land, in the proportion of from 40 to 50 loads per acre, and also for moorish soils, at the rate of 160 loads. The best for such purpose, is that known under the name of *Sea-sand*, the good effects of which will be more evident, in proportion to its distance from

from high-water mark : next in quality, is that washed down by the rain on gravelly soils ; but the worst sands are those which are dry and light, because they are liable to be drifted or blown about by every gust of wind.

Lastly, it was suggested a few years since by Dr. STRUVE, that rape, linseed, or other oils, might be divested of their colour, and also of any ill smell or rancidity, by simply agitating them in water mixed with sand ; a large proportion of the former being employed and changed for a purer fluid, as often as it becomes turbid. Dr. S. observes, that he employed this method with success on a small quantity of oil in a phial. We understand, however, that similar experiments have been made in Britain, but which did not succeed. Hence we are inclined to attribute such failure to a different, or impure, kind of sand used for that purpose ; and therefore advise those who wish to avail themselves of this hint, previously to wash and dry the sand ; next to submit it to the fire in a crucible ; and, while red-hot, to pour it into pure water : by repeating this simple process two or three times, a very soft, friable sand will be obtained, and which may be farther improved by trituration in a glass mortar, together with water ; afterwards washing, then suffering it to subside in a closed vessel ; decanting the fluid, and again drying it. Thus prepared, we venture to promise a successful result.

SAND-EEL, or *Ammodytes tobianus*, L. a fish, resembling an eel, but seldom exceeding one foot in length. It abounds on the sandy shores of Britain during the summer months, where it conceals it-

self, after the tide has retired, at the depth of twelve inches in the sand. In some places, this fish is frequently dug out, and in others it is drawn up by means of a particular hook contrived for that purpose.

The sand-eel is usually employed by way of bait, for taking other fish ; though it is sometimes carried to the table, being reputed to be very *delicate eating*.

SAND-PIPER, or *Tringa*, L. a genus of birds, comprising 45 species, 18 of which are natives of Britain : the principal of these are,

1. The *pugnax*. See RUFF.

2. The *alpina*, or DUNLING SAND-PIPER, whose back, head, and upper part of the neck are of an iron colour, marked with large black spots ; the lower part is white, with short dusky streaks ; in size, it is somewhat larger than the lark. These birds are found on the British shores, but principally on the coast of Yorkshire ; where they are taken in great numbers, and much esteemed at the tables of the luxurious.

SAND-STONE, a genus of fossils found in various parts of Britain, and which is divided into four species, namely :

1. *Calcareous Sand-stones*, which consist of carbonate of lime and marle, with a considerable portion of sand intermixed with its particles. Their surface is rough, generally grey, though they are sometimes found of a yellowish or brown cast.—This species is occasionally burned for lime.

2. *Aluminous Sand-stones* are those, the basis of which is *alumina*, or pure clay. They are of a close and compact texture, which is finer or coarser according to the size of the sand forming their constituent

stituent parts. This species is usually grey, yellow, or brown, and is chiefly manufactured into mill-stones, filtering-stones, or coarse whet-stones.

3. *Siliceous Sand-stones* are composed of grains of sand, that are cemented together with *silica* or flint, or with some substance, the basis of which is formed by the last mentioned fossil. They are considerably harder than any of the other species.

4. *Ferruginous Sand-stones* consist of large, loose particles of sand, which are cemented together by means of the rust of iron; being soft, and usually found of a dark-red, yellow, or brown colour.

Sand-stones are of great utility for buildings designed to resist the combined effects of air, fire, and water. Some of these fossils are soft while in the quarry, but become hard on exposure to the air. Those of a friable nature are generally employed, being best adapted to this purpose; because the hard kinds are apt to burst in the fire: the latter, however, will admit of being polished, and may be advantageously used for whet-stones.

SANDWORT, or *Arenaria*, L. a genus of plants, comprising 43 species, 7 of which, according to Dr. WITHERING, but with Dr. SMITH 10, are indigenous: the principal of these is the *marina*, or Sea-spurrey Sandwort, which is perennial, grows in salt-marshes and on the sea-coast, where it flowers from May till October.—This succulent vegetable bears great resemblance to samphire, and considerable quantities of it are actually pickled, and sold for that plant.

SANDAL, or **SANDERS** the **RED**, *Pterocarpus santalinus*, L. a

tree which is a native of the East Indies, whence its wood is imported into Britain, in the form of large billets. The best kind is externally of a dull-red, or nearly blackish colour, internally brown-red; being of a compact texture, and possessing neither a peculiar smell, nor taste.

Red sanders is chiefly employed as a colouring drug, in the compound tincture of lavender; for there is scarcely any other oil to which it communicates its tinge. When reduced to a fine powder, it is more effectual for dyeing, than if it be merely cut into small pieces; but the powder of red sanders commonly sold in the shops, is often moistened with acids, and adulterated with other substances.—BÖHMER observes, that wool dyed of this wood becomes hard; and that the colour may be rendered much darker, by the addition of common salt and sal-ammoniac dissolved in the ley:—the Dutch are supposed to macerate this tinging substance in urine, for a similar purpose.

Sandal-wood communicates a deep red to rectified spirit, but imparts no tinge to water.—GEORFROY and others have remarked, that the Brazil woods are sometimes substituted for red sanders; a fraud which may be easily ascertained, by immersing a small portion of the former in water, with which its colour readily combines.—The sandal-wood pays, on importation, a duty of 5s. 1½d. per cwt.

SANDARACH, a gummy-resinous substance, exuding from an exotic species of the juniper-tree. It is imported in the form of small pieces or tears resembling pease, which are transparent; of a pale-yellowish

yellowish colour; very brittle and inflammable; possessing a pungent aromatic taste, and emitting a fragrant odour when burnt.

Considerable quantities of this gum are consumed by varnish-makers, who dissolve it in the oils of turpentine, or linseed, or in spirit of wine, and thus prepare a kind of varnish, known under the name of *vernix*, which is used by cabinet-makers and painters. Gum-sandarach is also pulverized and passed through a fine sieve; in which state it is called *pounce*; and, when rubbed on paper, from which writing has been erased, it prevents the ink from spreading, when new characters are substituted.—This drug is subject, on importation, to the duty of 7s. 8½d. per cwt.

SANDERS, the **YELLOW**, or **WHITE**, *Santalum album*, L. a native of the East Indies; whence its wood is imported. It is of a pale-yellowish colour, a pleasant smell, has a bitterish aromatic taste, accompanied with an agreeable pungency.

From this elegant wood, the Chinese of distinction obtain their coffins, which are said to resist the effects of the air and moisture, for a long series of years. They also reduce it to powder, and, with the addition of water, convert it into a paste, which is applied to their bodies, furniture, &c. probably with a view to serve as a substitute for the more expensive odoriferous oils: the powder is also employed for incense in their idolatrous temples.—In Europe, however, it is chiefly prized by cabinet-makers, for the purpose of veneering.

This fragrant vegetable is, at present, very seldom used in medicine. When digested in pure

spirit, it produces a rich yellow tincture; from which, on distillation, the spirit arises without any remarkable flavour. Such preparation is, by HOFFMAN, considered as a medicine possessing similar virtues with ambergris; and he recommends it as an excellent restorative in great or general debility.—By distilling it with water, yellow sanders-wood produces a fragrant essential oil; which, on becoming cold, congeals and acquires the consistence of a balsam. On importation, this wood pays a duty of 3½d. per lb.

SANDIVER, or **SALT-OF-GLASS**, is a species of whitish salt, that is separated from the surface of glass, while in a state of fusion. It is of a pungent, corrosive taste, and is employed by farriers for the purpose of cleansing horses' eyes.

This substance is said to be detergent, and is, therefore, occasionally applied to the human skin, for removing foul spots: it is also sometimes used as desiccative in ulcers, shingles, and similar complaints; nay, it is even strongly recommended as a tooth-powder; though we believe it to be a very improper and hazardous dentrifice.

SANICLE, the Yorkshire. See **BUTTER-WORT**.

SAP, in botany, denotes the juice of plants, which is prepared by the moisture absorbed by their roots and leaves, whence it is circulated throughout every part, so as to constitute their nourishment.

The *sap* of vegetables has been compared to the *chyle* of animals: according to Dr. DARWIN, the former consists of sugar, water, and mucilage, together with other transparent solutions; for instance, those of phosphorus, carbon, and calcareous earth. The sap, when first

C 3

absorbed

absorbed by the roots, is thin and watery; but, during its progress, it acquires more consistence; and, when it arrives at the leaves, it is assimilated to the nature of the plant.

The circulation of this juice has generally been supposed to be performed in an uniform manner: it appears, however, from the experiments of Mr. FAIRCHILD, a late eminent gardener, that it has an irregular motion, directly contrary to its primary course; a discovery which is of considerable importance in horticulture. This agreeable and salubrious art may thus not only be improved, but also great advantage may be derived from the general application of this principle; as barren trees may now be rendered fruitful, and old or decaying ones restored to their original vigour.—See JUICE.

SAPFLOW. See FLUX, vol. ii. p. 314.

SARSAPARILLA, or *Smilax Sarsaparilla*, L. is a native of the West Indies, whence its medicinal root is obtained.

This drug has a glutinous, somewhat bitter, and agreeable taste, but is totally devoid of smell. It is highly esteemed, on account of its demulcent and farinaceous qualities, and has been successfully administered, in the different forms of decoction, extract, and powder, in cases of carious and ill-disposed cancers, or other sores. It is taken in doses of half an ounce of the root boiled in half a pint of water, till the third part be evaporated; or half a dram of the extract: in either of these forms, it acts by the skin as well as by the urinary passages, and is a mild, though inert remedy; on which account it is generally combined with the sassafras,

guaiacum, liquorice, and other substances, in a decoction of the woods.

SASSAFRAS, is the wood, bark and root of the Sassafras tree, or *Laurus Sassafras*, L. a native of America, the culture and properties of which we have already described, vol. i. p. 200. It is imported in long straight pieces, which are of a very light and porous texture; emitting a fragrant odour; and having an aromatic sub-acrid, though sweetish, taste. The strongest parts are the bark and small twigs; which, as well as the roots, are subject, on importation, to the duty of 2s. 6 $\frac{1}{2}$ d. per cwt.

Sassafras is a warm, aperient, and strengthening medicine; it has often been successfully given in the forms of infusion and decoction, for improving the tone of the stomach and bowels, in persons whose humours were in a vitiated state.—HOFFMAN has frequently prescribed a scruple of the extract of sassafras, with great benefit, in hypochondriacal spasms, and also at the decline of intermittent fevers.—Infusions of this drug are sold in the streets of the metropolis, under the name of SALOOP.

SATYRION, or LIZARD-FLOWER, *Satyrion hircinum*, L. a native perennial plant, growing in chalky meadows and pastures; flowering in the months of June and July.—Its leaves are very large, and the whole plant has a rank, disagreeable odour: nevertheless, it is eagerly eaten by cattle, and is said, in a remarkable degree, to increase the milk of cows.

SAUCE-ALONE. See Garlic-Hedge-MUSTARD, vol. iii. p. 255.

SAUSAGE, a well-known preparation of food, consisting of beef, pork, or veal, cut in small pieces: seasoned

seasoned with pepper, sage, or other spice; and then closely stuffed into skins obtained from the intestines of animals.

The most esteemed sausages are those made at Bologna, Venice, and other parts of Italy, whence considerable quantities are annually exported to various countries in Europe. They are made of raw pork beaten to a pulp in a mortar, together with garlic, pepper, and other spices; which, being intimately blended, are filled in the same manner as the common sausages, excepting that the larger intestines are preferably employed by the Italians.

This species of food affords very substantial nutriment, in whatever form it may be dressed:—sausages should not, however, be eaten by persons of weak or relaxed habits; as a vigorous stomach is required to digest them. The most unwholesome preparations of this kind are *blood-sausages*, more generally known under the names of *hog and black puddings*. These are composed of bacon and the blood of the same animal, together with thyme, sage, and other vegetable spices, to correct in some measure their rancidity. Such incongruous mixture, however, is at all times difficult of digestion; and, if the sausages have been *smoked*, the bacon necessarily becomes still more acrid, while the blood is concreted: in this state, the whole forms a most pernicious compound, which ought never to be eaten, even by persons who possess the most active powers of assimilation.

SAVIN, or *Juniperus Sabina*, L. an exotic evergreen shrub, which has small, rather prickly leaves, and produces blue berries, only after it has arrived at a consi-

derable age. Its stem attains the height of seven feet, and is apt to grow in a reclining posture: the wood is internally of a beautiful reddish shade, resembling that of mahogany.

The savin is of slow growth, but may be easily propagated by layers, by cuttings, or by the berries: if the latter can be procured, they should be sown in beds of common light earth, and in the spring or autumn, the young plants are to be set out in nursery-rows, two feet asunder. In October, November, or early in April following, they must be carefully transplanted to the place of their destination.

The leaves of savin possess a bitter, acrid taste; and their snell is so powerful and disagreeable, that it expels *moths* and similar vermin. When distilled with water, these leaves yield an uncommonly large proportion of essential oil.

With respect to its medicinal properties, savin is warm, stimulant, and aperient, being well calculated for promoting sweat, urine, and all the glandular secretions.—Hence a conserve made of its tops and leaves has afforded permanent relief in obstinate gouty and rheumatic cases, if taken for several months, nay, for a whole year, in small doses of a tea-spoonful or two, every morning and evening: few patients, however, will submit to swallow this nauseous drug; though it requires only a certain degree of resolution at the commencement.—The oil distilled from this shrub is one of the most violent emmenagogues, and ought therefore to be used with the greatest caution in obstructions of the uterus, or other viscera proceeding

from laxity or weakness. No druggist should sell this preparation to strangers.

An essential oil and watery extract of the savin are also kept in the shops.

SAVORY, or *Satureia*, L. a genus of exotic plants, consisting of nine species, of which the following are the principal, namely :

1. The *hortensis*, or Summer Savory, an annual herb, propagated from seed, which ought to be sown early in August on beds of light earth :—if the plants are intended to remain in the same situation, the seed should be sparingly scattered ; but, if they are designed to be transplanted, it may be sown more closely.

2. The *montana*, or Winter Savory, is a perennial vegetable, likewise obtained from seed, which requires only a poor, dry soil, where the plants will continue for many years, uninjured by the severest winters. As, however, the shoots will not be well furnished with leaves, when several years old, it will be proper to raise an annual stock of young plants.

Both the summer and winter savory have long been cultivated in the British gardens, for culinary, and medicinal purposes. Their warm aromatic, and pungent leaves, are much esteemed in salads : formerly, they were employed medicinally, with a view to attenuate viscid humours, to dispel flatulency, and to increase the appetite.—According to Prof. BRADLEY, this herb, when dry, and put into a bed, possesses the remarkable property of expelling fleas.

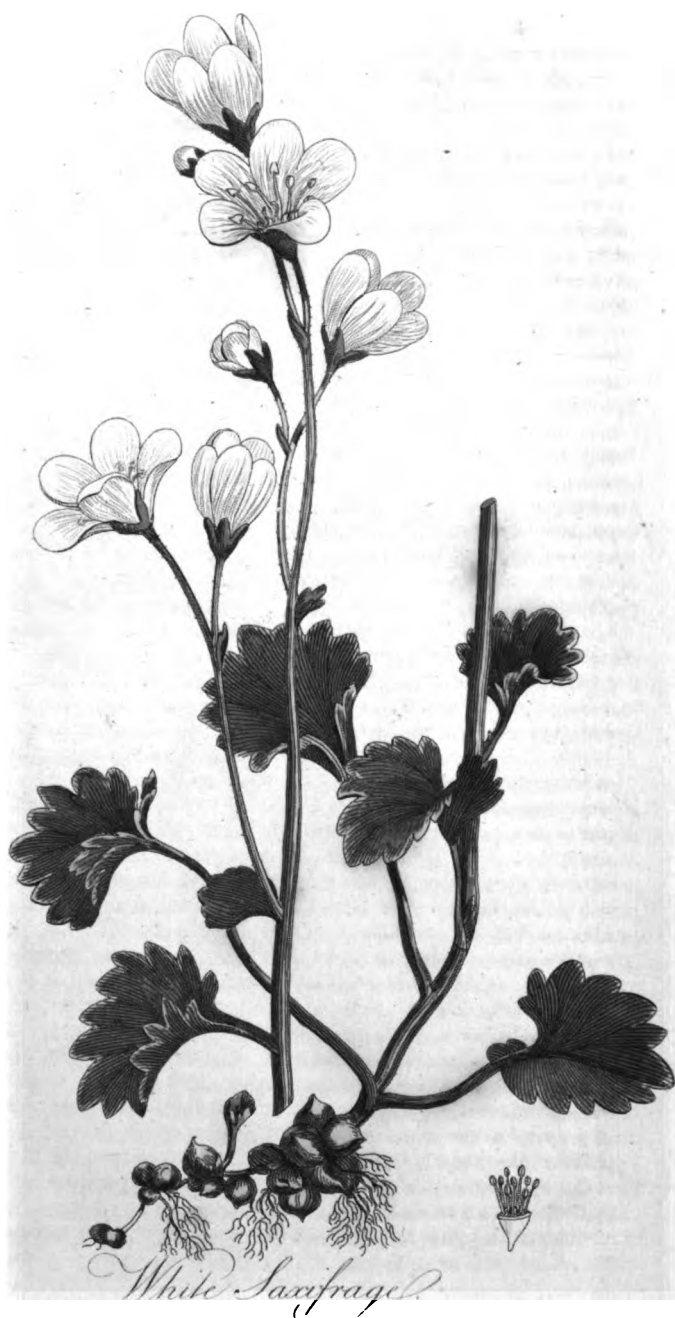
SAW-DUST, is the coarse powder remaining after any wood or timber has been separated or cut asunder with a saw. It is fre-

quently employed as a substitute for sand, and strewn on the floors of public and other buildings, frequented by numerous persons. This dust likewise affords good fuel for heating ovens, in which bread and other substances are to be baked.—We understand, from gardeners, that if the fresh dust, obtained after sawing oak-timber, be scattered on gravel-walks in February, or at an early period in March, it effectually prevents the growth of weeds : and, if it be perfectly rotten, together with blood and quick-lime, it proves an excellent manure.

The saw-dust of fir and pine-trees contains a very large proportion of resinous and saponaceous matter ; so that it has been usefully employed by the country-people of Sweden and Norway, as a substitute for soap, in washing coarse linen.

SAW-WORT, or *Serratula*, L. a genus of plants, comprising 18 species ; two of which only, according to Dr. SMITH, are indigenous ; namely :

1. The *tinctoria*, or COMMON SAW-WORT, is perennial ; grows in woods and on pastures, where it flowers in the month of July.—This plant is employed by dyers, to impart a yellow colour ; but, being inferior to the DYERS-WEED, its use is chiefly confined to the coarser woollen cloths, and as an ingredient in other dyeing drugs.—In combination with indigo, the Common Saw-wort strikes a permanent green colour. Its leaves readily yield a brownish-yellow decoction, which, on diluting it with water, changes to a brighter tinge ; and, by adding a solution of pure pot-ash, acquires a darker shade : but, on dropping into it a little of the spirit of sal-ammoniac, becomes reddish-



White Saxifrage.

reddish-brown; which may again be rendered of a golden tint, by the addition of pure water. On the whole, PÖRNER observes, that alum and gypsum appear to be best calculated for extracting a fine yellow colour from this plant; which the Germans industriously cultivate.—Goats eat this species, but horses do not relish it; and it is totally refused by sheep, hogs, and cows.

2. The *arvensis*, CORN SAW-WORT, or WAY-THISTLE, thrives in corn-fields and on road-sides: it flowers in the month of July; and is often a very troublesome weed.—When burnt, the ashes of this plant yield a very pure vegetable alkali, or pot-ash; on which account it deserves to be propagated in the vicinity of glass-houses and soap manufactories.—Neither cows, horses, nor swine eat this vegetable; but it is relished by goats: its young and tender tops are occasionally devoured by horses.—While young, the Way-thistle is eagerly consumed by sheep: when bruised, and mixed with bran, this weed affords excellent food for every species of cattle. Its seeds are enveloped in large downy crowns; which, according to BECHSTEIN, may be advantageously combined with wool, and thus converted into blankets and coarse cloth; nor are they less useful for stuffing pillows, bolsters, and mattresses.

SAXIFRAGE, the COMMON, or WHITE, *Saxifraga granulata*, L. an indigenous plant, growing on dry meadows and pastures, where it flowers in the month of April or May. Its perennial root consists of several small bulbs, which are externally of a reddish colour, and from which arise long hairy foot-

stalks, that are furnished with downy, kidney-shaped leaves.—The stems are thick, hairy towards the bottom, somewhat branched, and from 12 to 24 inches in height, having a few small leaves, which sit closely to the stalk. The flowers grow in small clusters, and are furnished with five white petals, that inclose ten stamina and two styles; the seeds are very numerous, small, and black.

According to LINNÆUS, this plant possesses an acrid, pungent taste, which, however, is not confirmed by the accounts of later botanists: on the contrary, the grains, or tubercles forming the root, and also the leaves, are equally devoid of any sensible quality.

The Common White Saxifrage was formerly in great request, for its supposed efficacy in curing nephritic and gravelly complaints: at present, it is totally disregarded; and we should neither have given a coloured engraving, nor described the specific characters of this plant, if it were not uniformly discovered in soils, beneath which a bed of GRAVEL will be found, at no considerable depth. Hence it affords a certain guide, by which surveyors and landed proprietors may be directed in digging for that useful fossil, especially in places where other stones cannot be easily procured, for repairing public roads.

SAXIFRAGE, the Common, Great, and Dwarf Burnet. See ANISE.

SCAB, or SHAB, a disorder peculiar to sheep: it is attended with an intense itching and scabby eruptions on the skin, occasioned by an impure state of the blood; and being most prevalent in wet land, or during rainy seasons. As this disease is generally believed to be infectious,

fections, the animals under its influence ought to be carefully separated from the flock.

Various remedies have been devised for the cure of the scab: the most common is that of washing the part with a decoction of strong tobacco in water, to which is added a small portion of oil of turpentine. Another application consists in rubbing the sheep with tobacco-water, sulphur, and alum boiled together, if the eruption extend over the whole animal; but, if it be only *partial*, a mixture of tar and grease will be sufficient.

In an *inveterate scab*, the anonymous author of the "*Farmers' Calendar*" recommends sulphur and bay-salt, or purging salts, to be given internally, and the distempered beast to be dressed with a strong mercurial ointment mixed with *Mel Egyptiacum* (for the preparation of which, see vol. ii. p. 343); or to be washed with a lather of black soap, or sublimate-water, lime-water, and oil of turpentine. The treatment, stated under the article FLY-STRUCK, is likewise said to be efficacious in this malady.

The following preparation is stated in the "*Cardiganshire Landlord's Advice to his Tenants*," as being effectual in removing the scab, namely: Take one pound of tobacco, six quarts of beef brine, six penny-worths (or about one ounce) of white arsenic, and one pint of oil of turpentine. These ingredients are to be mixed with a small portion of tar, and boiled: previously to the use of this liniment, it will be necessary to *break* every scab, and the sheep must be well rubbed, so that the liquid may thoroughly penetrate.

In some places, the animals af-

ected with the *scab*, are usually washed with *human urine*: but such treatment is pernicious; for, if the disorder be only partial, it will in the course of two or three days spread as far as the sheep may have been wetted.

There are various other expedients suggested for the cure of this eruption; but we believe the following to be one of the most efficacious: it was communicated by Sir JOSEPH BANKS, Bart. to the Society for the Encouragement of Arts, &c. in 1789. He directs of pure quicksilver 1lb.; of Venice turpentine and common oil of turpentine half a pound each; and of hog's-lard four pounds, to be triturated in a mortar, till the mercury be completely incorporated with the ingredients.

The method of using this ointment is as follows: The head of the sheep must first be rubbed; after which a furrow is to be drawn with the finger, from the region between the ears, along the back to the point of the tail, so as to divide the wool, till the skin be exposed to the touch. Next, the finger, being slightly dipped in the preparation, should be drawn along the skin. Similar lines should farther be opened down the shoulders and thighs, as far as the wool extends; and, if the animal be considerably infected, two other furrows are directed to be traced, parallel to that on the back, and one should likewise be drawn downwards, on each side between the fore and hind legs.

After this application, the sheep may be turned among the flock, without any danger of the infection being communicated; because, in a few days, the blotches will dry up; the itching will cease; and the animals be completely cured; nor have

have any instances occurred, in which such unctio has been in the least injurious.—Sir J. BANKS, however, observes, that this external remedy ought not to be delayed to a later period than Michaelmas.

SCABIOUS, or *Scabiosa*, L. a genus of plants comprising 42 species, 3 of which are indigenous and perennial, namely:

1. The *succisa*, or DEVIL'S-BIT SCABIOUS, grows in fields and pastures, where it flowers from June till August.—According to LINNÆUS, the dried leaves of this plant are employed to impart to wool a yellow or green colour; the latter of which, however, is more completely extracted from the blossoms, and may be communicated even to linen.—A decoction of this herb is likewise of service, when applied, by way of fomentation, to the hoofs of horses injured by nails.—Cattle derive nourishing food from this vegetable.

2. The *arvensis*, or FIELD SCABIOUS, grows in similar places, and flowers in the month of July or August.—This herb is, according to Dr. WITHERING, slightly astringent, bitter, and saponaceous; it is eaten by sheep and goats, but neither relished by horses nor cows.—From the Field Scabious, a green dye is likewise obtained for wool; and its reddish-blue flowers are fondly visited by bees.

3. The *columbaria*, or SMALL SCABIOUS, grows on dry hilly pastures, and blows from June to September.—The blueish-lilac flowers of this species are also very grateful to bees; and the whole plant is eaten by horses, goats, and especially by sheep.

SCALDS, a term applied to burns, occasioned by boiling water, or any of the corrosive mineral

acids improvidently applied to the skin.

Different modes of treatment have been adopted, in order to mitigate the pain which generally attends such accidents. Thus, frequent affusion of water, or immersion of the scalded part in that fluid, has been found very serviceable; nay, even the application of ice has occasionally been productive of great benefit, when the skin was *not broken*; but, in the contrary case, an emollient poultice should be immediately applied, and the treatment be similar to that of a fresh wound. If, however, the former method be proper, in such case it ought to be continued till the patient shivers from the cold; after which the scald must be continually moistened with lime-water; and a liniment of this liquid and sweet-oil, beaten together, must be spread over the sore. By this management, the most extensive scalds are speedily healed: it may likewise be pursued, where any part has become *chafed*, in consequence of hard riding.—Vinegar, both in a warm and cold state, has also been successfully applied to scalded parts; and, latterly, the oil of turpentine, with such effect, that the pain was frequently removed in an hour, and blisters were effectually prevented. In either case, we conceive, the skin ought to be *sound*.

SCALD-HEAD, or *Tinea capitis*, a disease chiefly incident to children, born of scrophulous parents: it is infectious only by contact, and appears to be seated in the roots of the hair, which protrude numerous small vesicles emitting an ichorous humour, and at length degenerating into ulcers that form a dry scab, or hard crust, some-

sometimes half, or a whole inch in thickness, spreading gradually over the whole head.

Causes.—This malignant eruption often arises from uncleanness, improper or coarse food; but more frequently from the contaminated humours of *wet-nurses*.

Cure.—The principal attention should be directed to the removal of the diseased parts, either by shaving or cutting off the hair, or by applying an adhesive plaster, made of equal parts of bees-wax, pitch, and mutton-suet. After removing this detergent application, it will be necessary to wash the head with sub-tepid soap-water; to plunge and cleanse the whole body in a lukewarm bath, frequently; and, in every respect to observe a very moderate and wholesome diet: hence salt-meat, pickles, bacon, pork, and even fish, will be improper. At the same time, the bowels should be regulated by the mildest laxatives; such as a few grains of rhubarb, with a dram of cream of tartar.—Numerous and whimsical remedies have been employed in this complaint, with various degrees of success; but we shall state only such as may be resorted to with safety.—Of this description is the Sharp Dock (*Rumex acutus*, L.) which may with advantage be used in decoctions, both externally (with the addition of soap converted into a lather) and internally as a diet-drink; for a concentrated extract of this medicinal plant, if taken in doses of one or two tea-spoonfuls mixed with honey or treacle, not only operates by the urinary passages, but also promotes evacuations by stool.—The leaves of the Common Colts-foot (*Tussilago Farfara*, L.), either alone, or in com-

bination with the Sharp Dock, may be given with equal benefit.—It would disgrace the healing art, to relate the various and absurd remedies that have strenuously been recommended by medical writers, for the cure of the scald-head: hence we shall observe, that the most melancholy effects have often followed the use of repellent plasters and ointments, such as loss of sight, deafness, palsy, emaciation, or malignant eruptions and ulcers in other parts of the body.

If the treatment before suggested, prove unavailing, it may be concluded that the disease proceeds from an hereditary taint, and requires more active remedies; for instance, mercurials, for the prescription of which, a professional man ought to be consulted.—In young infants, however, it is frequently cured by changing the nurse, or weaning the child, and removing it from a moist or marshy, to a dry and airy situation; because moisture, in our opinion, is one of the causes predisposing children to this malady.—Should the itching of the head become very troublesome, it may generally be allayed by gently rubbing the spot with equal parts of sweet-almond-oil, and the juice expressed from the leaves of the Common Burdock, previously simmered together over a moderate fire, till they become intimately blended into a soapy liniment, on adding a few grains of pearl-ash.

SCAMMONY, a concrete gummy-resinous juice obtained from the roots of the *Convolvulus Scammonia*, or Syrian Bindweed, an exotic plant, growing in Asiatic Turkey.—The best Scammony is imported from Aleppo, in light, spongy, friable masses, of a shining blackish

blackish ash-colour. It possesses a faint, unpleasant smell, and a bitterish, pungent taste.

In its medicinal effects, Scammony is an efficacious, but violent purgative; but, if triturated with sugar, almonds, or gum-arabic, it becomes sufficiently mild, and safe in its operation.—It may also be dissolved in a strong decoction of liquorice, then decanted; in which form it is not disagreeable to the palate, and proves a gentle laxative.—The common dose of Scammony is from three to twelve grains.—If accidentally too large a portion of this drastic medicine should have been swallowed, the most effectual antidotes will be copious draughts of mucilaginous preparations, or an immediate emetic.—This drug pays, on importation, 2s. 9d. per lb.

SCARLET. See DYING, vol. ii. pp. 203-4.

SCARLET FEVER, is a contagious inflammatory disease, attended with a bright-red efflorescence of the skin, which appears on the third or fourth day, with a slight swelling of the face: the redness gradually spreads, but vanishes after three or four days, when the scarf-skin generally peels off in branny scales. Though a sore throat in most cases occurs, it is by no means a necessary symptom.

The proximate cause of this malady, appears to be an unknown contagious matter propagated by the atmosphere; though the body may be predisposed to receive the infection, from sudden changes of cold and heat, rainy weather, and indigestion.

Cure:—In this formidable disorder, which often terminates fatally in three or four days, emetics should

be early and repeatedly administered; as such evacuations, according to Dr. WITHERING, and our own experience, are the remedy suggested by Nature; after which diuretics, such as vinegar and honey, with a few grains of nitre, will be of essential benefit. Great care, however, is necessary to avoid whatever may induce a looseness of the bowels, which is seldom salutary in this complaint. A gargle consisting of equal parts of lime-water and vinegar, or barley-water and honey acidulated with vitriolic acid, will be very useful in reducing the inflammation and swelling in the throat. The diet must be light and diluting, while the patient ought to abstain from all animal food; but he may take frequent draughts of thin gruel, barley-water, and the like, with currant-jelly. His body should be kept moderately warm in bed; and the room fumigated with vinegar and camphor, placed in a proper vessel over a burning lamp, in order to purify the air. When the fever and eruption cease, a dose or two of mild aperient medicines, may be given with safety and advantage.

Should the legs be remarkably swollen, after the other symptoms have subsided, a decoction of the Seneka root with vinegar and honey (at the same time bathing the lower extremities, or the whole body, in warm water) will afford the greatest relief. But, if the inflammation in the throat threaten suffocation, or be attended with violent fever, medical advice should be instantly procured; as the progress of this epidemic is uncommonly rapid, and often mortal.

SCIATICA. See RHEUMATISM.

SCIRRHUS is a hard, unequal tumor, which occasionally appears in

in different viscera, such as the liver and womb, but more frequently in the glandular parts, for instance, the breasts, arm-pits, and about the neck. It mostly arises in consequence of inflammation, though it may also occur spontaneously, in persons of a heavy, phlegmatic, or scrophulous habit.—A scirrhus may likewise be gradually induced by passions, especially those of a depressing nature; by gross food; the abuse of acids; external violence; sudden cold; suppressed evacuations, and various other causes.

The degree of danger attending scirrhus indurations, varies according to the nature of the diseased part, and stage of the disorder; though an internal tumor is always more dangerous and difficult to be removed, than one situated externally; as the former may be productive of great injury to the animal frame, by compressing the adjacent parts, whence palsy, colic, &c. are the concomitant evils. As long, however, as the swelling remains in an indolent state, no immediate danger need be apprehended; but, when it once becomes painful, or ulcerated, there will be just reason to fear that it may change into a *Cancer*.

Treatment:—If the patient be in other respects healthy, and the tumor but recently formed, its dispersion may be effected by the internal use of resolvents; for instance, the mildest preparations of mercury (calomel), and antimonial wine, with the decoction of the woods: externally the warm gums, in plasters, such as sagapenum and ammoniac; or the volatile liniment, or even a solution of sal-ammoniac in vinegar, have often been productive of good effects; but, if

the patient be advanced in years, or the swelling painful, great caution becomes necessary; lest, by any improper application, the disorder assume a cancerous taint. Various other more potent remedies, such as the hemlock and fox-glove, have been strongly recommended, with a view to effect a resolution; but they have in numerous instances failed of success. In desperate cases, therefore, where medicines proves fruitless, the tumor must be timely extirpated by the knife, provided that the situation of the parts admit of an operation, and a free discharge. But, if neither of these objects can be attained, it will be advisable to promote the formation of an *abscess*, as the only means of removing the complaint.

If the liver be thus diseased, it may be ascertained by the following symptoms: tumor and hardness on the right side about the short ribs; pain, particularly when lying on the opposite side; emaciation of the upper parts, and dropsical swelling of the lower extremities. In this case, the bowels should be regularly opened by the mildest laxatives; while the patient's diet ought to be bland and nourishing. The nitric acid, in the proportion of one dram per day, diluted with three or four pints of water, with the addition of some syrup of marsh-mallows, to be used as the common beverage, has lately been prescribed with great advantage; but of which we have not had sufficient experience. Hence we would give the preference to the acetated kali, or regenerated tartar of the shops, to be taken in doses of 2 or 3 drams per day, dissolved in water; being a medicine from which the
greatest

greatest benefit has often been derived.

With respect to the analysis of a new remedy against scirrhus and cancer (mentioned in vol. i. p. 428), we understand, that though the administration of this pretended specific was, in several cases, apparently attended with good effects, yet there is no attested instance, in which it has completed a cure: on the contrary, the patients who credulously resorted to this *professional empiric*, are said to have uniformly been disappointed in their expectations, so that we may save ourselves the trouble of analyzing a *nostrum* which its supposed inventor (though he has offered to submit it to the test of chemical inquiry), carefully carries about in his pocket, and administers to the patient in his presence.

SCORZONERA, the *Common*, or *Scorzonera Hispanica*, L. an exotic plant, which has long been raised in British gardens for culinary purposes, and especially as an ingredient in soups, on account of its palatable and nourishing roots. —It is propagated by seeds: the plants should be carefully thinned, and cleared from all weeds; for, otherwise, they will never attain any considerable size.

The root of the scorzonera ought, before it is boiled, to be deprived of its black rind, and immersed in cold water for half an hour: thus, its flatulent effects will be greatly prevented, and it will also become less bitter.

SCOTCH-FIR. See **FIR-TREE**.

SCRAMBLING - ROCKET. See **MUSTARD**, the Hedge.

SCRATCHES, a distemper in the heels of horses.

Under the article **GREASE** (vol. ii. p. 400), we have already stated

the method which is generally pursued in the treatment of this disorder: we shall therefore only observe, by way of supplement, that if the scratches prove obstinate, and the sores be deep, the following healing ointment may with advantage be applied:—Take of Venice turpentine 4 oz.; quicksilver 1 oz.; incorporate them properly, and then add honey and mutton suet, of each 2 ounces; anoint the diseased parts once or twice a day; and, if the animal be of a full or gross habit, bleeding and purging, together with proper alteratives, must be resorted to; in order to correct a vitiated state of the blood. Should, however, any cavities be formed in the horse's heels, they must first be laid open; as it is absolutely necessary to apply the dressing to the bottom, in order to effect a radical cure.

SCROGS. See **SLOB-TREE**.

SCROOBY-GRASS. See **SCURVY-GRASS**, the *Common*.

SCROPHULA, or *Evil*, is a swelling of the conglobate glands, particularly about the neck and ears; though sometimes extending to the arm-pit and the groin. In its progress, the joints and bones are liable to be affected.

Scrophulous tumors may be distinguished from scirrhus, by their soft and moveable state; they sometimes disappear in one part, and rise again in another. This complaint, however, is not confined to the external parts, but occasionally attacks the lungs, mesentery and other organs; in which cases a swelling of the upper lip will indicate the concealed evil.—Children afflicted with this malady are generally of a florid complexion; they have a soft skin and tumefied abdomen: such individuals

duals attain to a maturity of understanding superior to others of the same age. In some countries, the disease is endemial : thus, it is uncommonly prevalent in Britain, Holland, Switzerland, and Carinthia.

Scrophula often frustrates the efforts of the healing art ; though it seldom proves fatal, while it is confined to the external glands ; but, if it extend its influence to the pulmonary organs, it frequently produces tubercles, and eventually consumption. When the joints are diseased, it occasions tumors, stiffness of the limb, ulcers, decay of the bones, and often emaciation of the body, till death closes the fatal scene.

Causes :— Whatever tends to produce a viscid lymph, and to debilitate the constitution in general, such as coarse and acid diet, especially pastry ; moist air ; damp habitations ; colds ; want of exercise ; impure water ; and the vitiated milk of nurses ; all may engender the *evil*. Farther, when the scrophulous taint is once introduced into the constitution, it generally appears after the small-pox, measles, and even in consequence of external injuries. Whether this disorder be hereditary and contagious, is a point on which the opinions are divided ; but whether it may, or may not, be communicated by contact, prudence would dictate, that healthy children should not be suffered to sleep with scrophulous persons.

Cure :—A great variety of remedies has been devised for removing scrophula : the principal difficulty in extirpating this malady, however, arises from the circumstance, that it may remain concealed for a long time, and thus

become deeply rooted in the constitution, before its effects are evident. Hence, we shall confine our account to such remedies as have generally been attended with salutary effects.

In order to resolve the viscid lymph, and to strengthen the system, the use of Peruvian bark, in the state of powder, combined with hemlock, forms an excellent remedy ; but the proper doses ought to be regulated by a medical practitioner. Sea-water and sea-bathing, as well as moderate exercise, especially in a warm, serene atmosphere, are alike conducive to recovery. During this course, the bowels should be gently and regularly opened ; the diet ought to be light, consisting of nutritive food, easily digestible ; and the sleep must also be moderate, not exceeding seven or eight hours in adults, and nine or ten hours, in children.—Frictions will be serviceable, by promoting the circulation of the fluids, and tending to strengthen the solids. Hemlock-plasters applied to the tumors, and burnt sponge combined with small portions of black pepper, taken before breakfast, have frequently been of service in reducing them, especially if assisted by sea-bathing. Mercurials and antimonials are powerful, though precarious, remedies ; and, if the former be employed in consequence of medical advice, they should never be given in such quantities as to induce salivation, which would doubtless aggravate the disorder.—Milk-whey, with the DEAD-NETTLES, has also occasionally been found useful ; but we forbear to mention the absurd sympathetic remedies formerly resorted to, for the cure of the *evil* ; as these superstitious practices

tices are, at present, in vogue only among the vulgar.

If, however, none of the medicines before enumerated, have the effect of dispersing the swellings; on the contrary, if a *suppuration* of the tumors be likely to ensue, they should never be opened, till the tumid indurations are softened; or, it will be more safe and advisable to suffer them spontaneously to break, without any application of emollient, or other poultices; as the subsequent healing of the ulcers will thus be greatly promoted.

The *nitric acid* has, lately, been extolled as an efficacious remedy against hard indolent swellings, and particularly those of a scrophulous nature: in the latter cases, it is given according to the age of the patient, in doses, of from 20 to 60, and even 80 drops, in water sweetened with honey; and which must be taken gradually in the course of 24 hours.

Should it occasion nausea, and injure the enamel of the teeth, these inconveniencies may be remedied by diminishing the number of drops, and adding more sugar or honey. In some instances, this acid has proved beneficial; but it requires more time, positively to ascertain its effects.

SCULL, is a conjunction of bones, eight in number, surrounded by a membrane called the *pericranium*, and forming a cavity for the brain; which is thus completely inclosed and defended.—In an infantile state, the skull is of so delicate a texture, as to admit of being moulded into almost any form; a circumstance, on which the shape of the heads of different nations chiefly depends; but, in an adult state, they acquire so con-

crete a form, as to represent one solid bone, and are afterwards more easily broken than separated.—The edges or margins of the bones are distinguished by certain lines, called *sutures*.

The principal injuries, to which the skull is exposed, proceed from external violence; for instance, blows and falls, by which the bones may be *fractured*. The danger attending such accidents, varies according to the more or less complicated nature of the fracture, and the relative health of the patient: for, if his constitution be debilitated, or the humours be vitiated, the most trivial contusion of the head may prove fatal.

The symptoms, by which a fracture of the skull may be ascertained, are as follows: the points of the bones may sometimes be felt; the patient is afflicted with giddiness, drowsiness, stupefaction, loss of sight; and, when the concussion has been violent, blood is discharged from the eyes, nose, and ears; which last circumstance generally denotes a compression of the brain. If, however, several of these appearances concur, and the diseased part cannot be distinguished, the head should be deliberately, but firmly pressed in every direction; thus, the patient will, in most instances, point out the seat of the injury, by his own sensations of pain or uneasiness, when the fractured part is touched.

As these dangerous cases require the application of the trepan, without delay, we shall only state a few particulars relative to the dietetic treatment, after the operation is performed. The patient ought to be kept in the most quiescent state; his bowels must be regulated by gentle aperients, such

as are the most agreeable to the taste and stomach, in order to avoid vomiting; the food should consist of the lightest and most digestible vegetables; while he must cautiously abstain from all fermented and spirituous liquors, and drink barley-water, or other diluents, in which a few grains of nitre have been dissolved.

A small scar generally remains after the wound is healed; but, if a considerable part of the integuments have been lacerated, or destroyed, the bone will be covered only by a thin skin, over which the convalescent ought to wear a round plate of tin or silver, adapted to the purpose, and lined with flannel, to protect it from external injury.

SCULL-CAP, the **COMMON**, or **BLUE**, or **HOODED WILLOW-HERB**, *Scutellaria galericulata*, L. a native perennial plant, growing on the banks of rivers, and the borders of ponds; flowering in the month of July or August.—Its square stem attains the height of two feet: the herb is eaten by cows, sheep and goats; but is refused by horses and hogs.—**CARTHEUSER**, a German writer, informs us, that the whole of this astringent vegetable may be employed for dyeing black, with the addition of green vitriol.

SCURVY, or *Scorbutus*, denotes a putrescent, or rather dissolvent, state of the blood. This term is often misapplied to a variety of eruptive complaints, which have no specific names.

The scurvy has been divided into several species, an investigation of which would be foreign to our purpose; especially as the *land-scurvy* only differs from the *sea-scurvy*, by being less severe.

Symptoms:—Debility; dejection of spirits; bleeding and decay of the gums; fetid breath; spots of various colours, but mostly of a livid hue, on the thighs, legs, and particularly at the roots of the hair. In the progress of this malady, blood issues from different parts of the body, and ulcers are formed, which emit only an ichorous humour, and are with difficulty healed. The patient is now subject to great pain and fainting, on the least motion; or, when exposed to the fresh air, his feet swell; breathing is impeded; and at length diarrhoea, dropsy, or fainting, terminates his sufferings.

Causes:—Low, and damp habitations; an inactive life; suppressed or excessive evacuations; impure air; inattention to cleanliness; depressing passions; coarse, unwholesome, salted, and smoked food, when taken for a considerable time, and without a proper share of vegetables; foul water; want of malt liquor—to the influence of all which causes, seafaring persons are peculiarly subject, as well as the inhabitants of northern climates.

Cure:—It is evident from the preceding statement, that the principal relief must be afforded by a diet and regimen exactly opposite to the cause. Thus, if the scurvy originated from low, damp, or confined air, the patient must be removed to an open, dry, and warmer situation: if it arose from inactivity, a sedentary life, or depressing passions, recourse should be had to exercise in the open air; and he should endeavour to divert his mind by cheerful company and pleasing amusements. Suppressed evacuations must be restored with precaution, and by mild aperients, the

the most eligible of which are, tamarinds, prunes, cream of tartar, and rhubarb.—When the scurvy proceeds chiefly from the long-continued use of salted provisions, it will be necessary to take, medicinally, large portions of the juice of lemons, oranges, limes, tamarinds; water-cresses, brook-lime, scurvy-grass, and fresh vegetables of every description; but, where the latter cannot be procured, pickled or preserved cabbages, cucumbers, onions, gooseberries, and other fruits, as well as horse-radish and mustard, may be employed with equal advantage. At first, however, the patient ought to eat or drink the remedies above specified with great moderation; in order to avoid a diarrhoea or flux. For common beverage, good cyder, perry, whey, spruce-beer, or a simple decoction of the spruce-fir (of which last, two pints are to be drunk every day) will prove highly beneficial: with the same intention, Bishop BERKLEY recommends *tar-water*.—One of the most efficacious antiscorbutics, however, is *Sauer Kraut*, a well-known preparation of the white cabbage, described under the head of CROUT; which alone has often checked the progress of scurvy, under the most alarming appearances.—See also WORT.

Considerable benefit has, in several instances, been derived from a decoction of the Water-Dock (*Rumex aquaticus*, L.) by boiling one pound of the root in six pints of water, and adding an ounce or two of crystals of tartar, till one-third part of the liquor be evaporated; of which, from half to a whole pint, is to be drunk every day.

If, during this vegetable course, the body should be costive, and the

skin dry, the mild aperients before mentioned, and warm bathing with aromatic plants, may be resorted to with advantage; though the latter must be omitted, when there is any apprehension of hemorrhages.—The mouth should be rinsed with a decoction of the Peruvian bark, to which a small portion of tincture of myrrh may be added: farther, lint dipped into a simple decoction of the bark, and applied to the ulcers, will be found very useful. Lastly, if the limbs be swollen, or the joints stiff, it will be advisable to foment them with warm vinegar; or to bathe the parts affected in tepid water.

SCURVY - GRASS, or *Cochlearia*, L. genus of plants comprising eight species, five of which are indigenous; and the principal of these are:

1. The *Armoracia*. See HORSE-RADISH.

2. The *officinalis*, COMMON SCURVY-GRASS, or SCRUBY-GRASS; growing on sea-shores, and in mountainous situations, where it flowers in the months of April and May.—When cultivated in gardens, this maritime plant retains its properties, without any sensible change. It possesses a considerable degree of acrimony, which resides in a very subtle essential oil: and, as an antiscorbutic, its effects are sufficiently ascertained. In the pituitous asthma, and chronic rheumatism, the scurvy-grass is a powerful remedy. It is likewise a pungent stimulating medicine, which may be advantageously employed for promoting the fluid secretions.—A distilled water, and a conserve, are prepared from its leaves; and the expressed juice is prescribed with that of oranges, among other

other antiscorbutics.—It may also be used as a salad.—Cows eat this plant, but it is refused by horses, goats, and sheep.

3. The *Anglica*, **ENGLISH SCURVY-GRASS**, or **SPOONWORT**, grows on sea-shores, in muddy soils, or salt-marshes, and flowers in the month of May.—This species possesses similar properties with the preceding, but in an inferior degree.

4. The *Coronopus*, **COMMON WORT-CRESS**, or **SWINE'S-CRESS**, thrives in corn-fields, on rubbish, and road-sides; blows from June till August.—It is a palatable salad-herb, on which account the Germans cultivate it in gardens.

These different species of scurvy-grass may be propagated by seeds, which are to be sown in July, in a moist soil; because, if committed to the ground in the spring, they seldom prosper:—when the young plants appear, they should be thinned, so as to leave them at the distance of about six inches apart. Those of a proper size may then be transplanted; and, in the succeeding spring, they will be fit for use: the remaining plants may be left for seed, which will attain to maturity in the month of June.

SCURVY-GRASS, the Scottish. See **BINDWEED**, the Sea.

SCYTHER, or **SITHE**, an implement of husbandry employed for the purpose of cutting grass, and also for the mowing of corn.

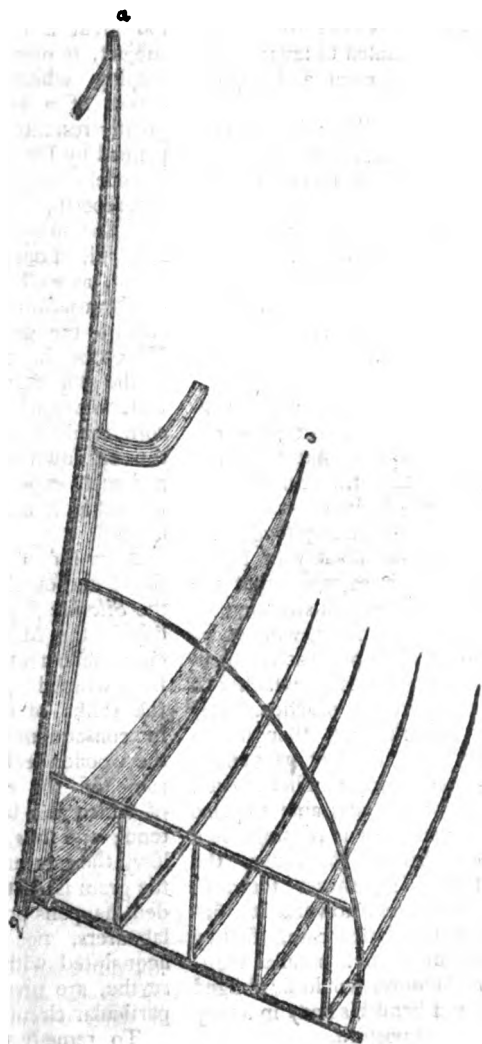
Before we attempt a description of the latest improvements on this rural instrument, we shall briefly observe, that the well-known *Hainault*, or *French Scythe*, for reaping wheat, has of late years met with many advocates in Britain. It consists, according to the description given by Dr. TEMPLE-

MAN, of a short blade, being about one-third of the length of those commonly used in England; with a wooden handle to be held in the right hand, having a bend and a broad rounded piece at the upper end, for the support of the arm. Farther, an iron hook is fixed to a staff, four feet in length, made of oak or ash, to be used with the left hand, with a mortise near the end, for the convenience of the husbandman's carrying the scythe on his shoulder. On the handle of the scythe, and staff of the hook, at about half a yard from the bottom, are placed leather loops for the fingers, to keep the two grasps at proper distances from the ground.

Having already stated the disadvantages, which cannot be avoided in the use of *sickles* for cutting corn, under the head of **REAPING**; and likewise pointed out the superior utility of scythes, in the article **MOWING**, we shall now give a description of two instruments, which are eminently calculated for both purposes. These scythes were first introduced to public notice, by the Patriotic Society of Milan, in one of the earlier volumes of their Transactions. Convinced of the inconveniencies arising from the use of the common instruments, they procured a model of a *Silesian Scythe*, with which the corn in that country is uniformly mown. Having caused a similar implement to be constructed, it was accordingly tried; and, notwithstanding its imperfect manufacture, as well as this circumstance, that the labourer had never used a scythe on such principle, it was fully proved, that *nearly half the usual time was saved*, and the fatigue or labour, was considerably lessened. Farther, the corn was thus

thus cut without receiving any injury from the concussion in falling to the ground, on which it was spread in a regular manner, so that it could be easily formed into sheaves.—The Milanese Society

was afterwards presented with an Austrian implement, differing from the Silesian in a few respects, which will be noticed in the subsequent account.



This figure represents the *Silesian Scythe*, which varies little from that commonly employed for mowing grass: the blade, however, is somewhat smaller, and has four wooden teeth which are fixed parallel to it, with a view to prevent the grain from being scattered, when it is cut; so that the labourer is enabled to lay it on the ground in an even and regular way.

a, b, the handle, which is two Milanese *brasses* and $9\frac{1}{2}$ inches, or about 4 feet and 4 inches English measure, in length.

b, c, represents the blade, being one *brass* and $3\frac{1}{2}$ Milanese inches, or about two feet one inch long.—The piece of wood, in which the teeth are inserted, is one *brass*, $1\frac{1}{2}$ inches, or nearly two feet in length.

The Austrian scythe greatly resembles the instrument above delineated, excepting that the blade is larger, and the number of wooden teeth is increased to five, which are consequently longer.

The Patriotic Society of Milan observe in their memoir, that the difference in the construction of these two implements, will render it necessary to employ each of them in a peculiar manner, which can only be acquired by practice. They farther remark that, though, in mowing grass, the feet are kept in a direction nearly parallel to each other, it will be advisable to place them, when corn is reaping, in a line, one behind the other, the right foot being thrust forward, and the left drawn towards it; because, in the latter case, if they were advanced in a parallel manner, the labourer would be obliged to turn and bend his body in a very inconvenient posture.

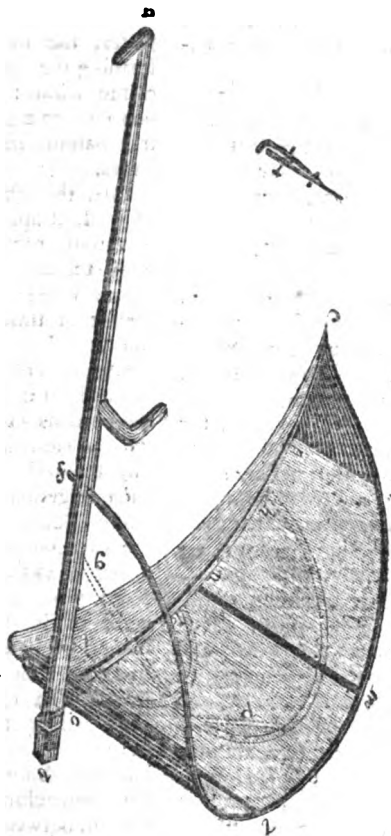
Such of our agricultural readers as are accustomed to the use of the common scythe, will easily ascertain the most suitable and advantageous mode of employing the instrument now described; and, before we complete the history of the new implements, it will not be too great a digression from the subject, to mention the manner of reaping wheat in Flanders, by means of a very simple scythe, greatly resembling that above explained by Dr. TEMPLEMAN; and a model of which is preserved in the repository of the "Society for the Encouragement of Arts, &c." Adelphi, London. Another account, as well as a representation of this useful tool, was communicated to the public by Mr. ADAM WALKER, in 1788, and inserted in the 9th volume of *Annals of Agriculture*, where he observes, that corn, thick clover, and vetches, are thus cut down with great regularity, and such expedition, as to surpass the sickle, in the proportion of three to one.

After the above given descriptions, and observations, relative to the *Silesian Scythe*, had been published, the Milanese Patriotic Society made additional experiments, from which it appeared, that when the stalks of corn are bent down in consequence of heavy rains, the wooden teeth are apt to catch some of the ears, to the stalks of which the blade does not extend; and thus, not being cut below, the ears are pulled down and the grain is scattered. This accident happens principally, when the labourers, not being sufficiently acquainted with the use of the scythe, are unable to adapt it to particular circumstances.

To remedy these inconveniences,

cies, it occurred to an ingenious black-smith, to add a *collector* or *gatherer*, made of cloth, the con-

struction of which is represented in the annexed Cut.



a, b, c, is a common scythe.

c, d, m, l, o, f, n, e, is the *gatherer*; which at *c, d, e*, is composed of a thin iron plate; having a cavity at its extremity, for receiving the point of the blade. At *e, d*, are holes for sewing in the cloth, which is light, coarse and cheap: it is likewise fixed to two thick iron

wires, the upper of which is continued to *f*, where it terminates in a hole, in the handle:—the other is secured to the back of the blade. The method of fixing the gatherer to such blade, will be more clearly understood by referring to the small detached figure, delineated in the Cut above given, and repre-

D 4

sent-

senting one of the irons, which are secured by means of screws to the back of the scythe. These irons proceed from, and constitute a part of, the upright irons *m, n, l, o*, that that serve to keep the gatherer extended.

This contrivance is very simple and cheap: an attempt, however, has been made to simplify it still farther, by substituting for the gatherer two iron-hoops, represented in the Cut last referred to, by the dotted lines, marked *h, g, k, i*, with a cross-piece, that serves to connect them; thus saving the cloth and iron plate before described.—Experiments, however, have been made with both these implements; from the result of which it appears, that the gatherer is, upon the whole, preferable to the hoops, as no ears of corn are left behind; and that the latter alteration promises to be most serviceable, when there is no short corn, that can insinuate itself between such iron hoops.

SEA, strictly speaking, signifies a large body of water, which is connected with the ocean, and partly encompassed by land; such are the Baltic, and Mediterranean Seas: though the term sea is, also, frequently employed to denote the immense fluid mass that surrounds the globe.

The sea is the genuine source of all rivers; as the vapours, raised from its surface, are gradually dispersed over the earth, on which they descend in the form of drops or rain; and, by supplying streams, not only fertilize the vegetable kingdom, but at the same time, open an intercourse between distant nations or provinces; while they convey wealth, and thus contribute to the conveniences of mankind. The colour of the ma-

rine fluid appears to be of various shades; namely, green, yellow, black, &c.; these phenomena, however, depend wholly on accidental causes; such as the depth of the water, the nature of the matter forming the bottom, or the motion of the winds: for, if sea-water be poured into a glass, it will be found transparent, like that drawn from rivers.

But, though the sea be thus beneficial, it appears from actual observation, that it daily encroaches upon the land; in consequence of which valuable tracts will, in the course of time, be completely inundated: hence it has been deemed necessary to resort to embankments, or artificial dams, in order to repel the inroads of this element; and, with a view to facilitate such national object, the Society for the Encouragement of Arts, &c. have offered liberal premiums. Among the successful candidates, was Mr. JOHN HARRIOTT, of Rochford, Kent, who effectually secured 142 acres of land from the sea, by means of banks; and on whom, in 1785, they conferred their gold medal. In 1787, they bestowed their silver medal on the Rev. HENRY BATE DUDLEY, for embanking, draining, and freeing from the encroachments of the German Ocean, between 3 and 400 acres of land, that was formerly a stagnant marsh; but which, in consequence of his exertions, was rendered worth 20s. per acre, on a lease for twenty-one years. In the year 1800, the Society adjudged their gold medal to the same gentleman, for his farther endeavours, in that laudable pursuit. The tract, thus obtained, amounts to 206 acres; and is defended from the ocean by an embankment of earth only, and which

which extends nearly one mile in length. It was commenced on a base of 32 feet, and carried up to the height of seven feet; for the more easy ascent and descent of the waves; a plane of five feet being left on the top, and the *land-side* of the embankment made as nearly perpendicular as the security of the base would permit. This land is divided into four extensive marshes, by means of twelve-feet ditches; and all superfluous moisture is removed by numerous small drains or rills, that are cut in different parts of the tract.—Consistently with our limits, we cannot descend to particulars on this interesting subject; but, as numerous practical hints may be derived from the account of the different expedients ingeniously adopted, the inquisitive reader will consult the 4th, 6th, 14th, and 18th vols. of the Transactions of the Society before mentioned; where he will meet with a clear and explicit narrative.

SEA-AIR, denotes that part of the atmosphere, which is incumbent on the sea.

Experience evinces, that this air is salubrious, and singularly beneficial in the cure of particular diseases; on account of its being impregnated with a larger proportion of oxygen-gas, and containing less noxious vapours than that on land. Hence, a short voyage has often been successfully undertaken by consumptive patients, and such as were afflicted with asthmas, spitting of blood, and dropsies; especially if directed to a warmer country. These excursions have, likewise, been found very serviceable during the sickly season that annually prevails in the West Indies, and other hot climates. Dr. Linn (Essay on the Diseases inci-

dent to Europeans in Hot Climates, 8vo: 1768) has therefore judiciously proposed a "floating factory," or *infirmary-ship*, to be stationed at a small distance from the shore, as being an effectual mean of preserving numerous lives. He observes, that there are certain fevers, which require an immediate change of air; as, otherwise, the most powerful and appropriate medicines will prove ineffectual; and, if a patient were removed to such vessel, as soon as the symptoms of the disease appear, he is of opinion, that the latter will not only be milder, but the cure will be facilitated; and the recovery of the patient more completely ensured. In consequence of this preservative measure, the constitution will be gradually inured to the climate; and thus be rendered less susceptible of injurious impressions, either from the atmosphere, or the exhalations of the soil.

SEA-ANEMONE. See ANIMAL FLOWER.

SEA-BATHING. See vol. i. p. 186.

SEA-CALE. See KALE, the Sea.

SEA-CABBAGE; or Sea-Colewort. See CABBAGE, the Common.

SEA-CUSHION; or Sea Gilliflower. See THRIFT, the Common.

SEA-GRASS. See SALTWORT, the Jointed.

SEA-HOLLY. See ERYNGO.

SEA-LAVENDER. See LAVENDER-THRIFT.

SEA-PARSLEY. See Scottish LOVAGE.

SEA-PARSNIP. See SAMPHIRE, the Prickly.

SEA-SICKNESS, a convulsive affection of the stomach, attended with great nausea and vomiting: it is occasioned by the irregular motion of the vessel.

The sea-sickness generally attacks

tacks persons unaccustomed to voyages on the ocean, particularly if they embark in a small vessel, which is not deeply laden. On the other hand, passengers in very large ships are less violently affected; as the waves make only a slight impression on the latter. People advanced in years, and also children (especially if they be of a dark complexion) are less liable to this complaint than those who are in the prime of life, and possess a fair skin. Its duration is very unequal; in general, only for one or two days; though it sometimes continues for weeks, or months, and even during the whole voyage: in which latter case, it induces head-ach; fever; intense thirst; a quick pulse; and a total inability to retain either solid or liquid food on the stomach;—affections, that are always very difficult to remove.

But, though sea-sickness be thus irksome and distressing to the patient during its continuance, it has often proved highly beneficial in numerous diseases, particularly in asthmatic and pulmonary cases: very few instances, indeed, have occurred, in which fatal consequences have resulted from this temporary complaint.

Among the numerous remedies devised, with a view to alleviate this debilitating indisposition, one or two draughts of sea-water have been found very serviceable; for, though extremely disgusting, that fluid will clear the first passages, if they be foul or oppressed, and thus afford effectual relief, when the nausea and sickness which it necessarily occasions, have abated. The frequent application of æther to the temples and nostrils, together with a tea-spoonful of that liquor,

diluted in a glass of water, and occasionally taken, has likewise been attended with good effects.

In order to mitigate, and if possible, to prevent the violence of that complaint, it has farther been recommended, never to embark, immediately after meals; and, when on ship-board, to partake very moderately of food, which ought to consist of bread and fresh meat (at least as long as this article can be procured), to be eaten in a cold state, with the addition of mustard, or pepper. The drink should, likewise, be sparingly, but frequently taken, and ought to consist of lemonade, tart wines mixed with Seltzer water, and fermented with pounded sugar; or other liquors containing a large portion of fixed air.

Passengers at sea should wear flannel shirts and drawers, together with trowsers and other warm clothing; because these simple expedients have frequently prevented sickness, vomiting, and the numerous symptoms accompanying such convulsive efforts. They ought likewise to swallow, occasionally, a few drops of the spirit of vitriolic æther, commonly called the dulcified spirit of vitriol, either on lump sugar, or mixed with peppermint-water; and, if they be troubled with a slight diarrhœa, it will be proper to administer a few grains of rhubarb; or (which is preferable, if it can be effected) a clyster, consisting of Venice soap, dissolved in salt-water. Farther, they should, as long as possible, remain on deck, even during rainy and stormy weather; because the breeze arising from the sea, is far more salubrious than the confined and stagnant air of the cabin. No passengers, however, ought to watch

watch the motion of the waves, particularly when the element is violently agitated by tempests; nor should they indulge in sloth or inactivity, but take proper and frequent exercise, such as working at the pump, &c. for indolence only tends to aggravate the disorder.—Lastly, whatever may disturb or enervate the mind, such as reading, intense study, or meditation on gloomy subjects, must be purposely avoided, and no opportunity neglected, of participating in innocent mirth, and mental relaxation.

SEA-SLUDGE, or **SALT-CLOD**, is the surface, or that part of a saline marsh, which is deposited by the high tides. It is much richer, and less intermixed with sand, than the land which is more regularly overflowed.

Sea-sludge is an excellent manure; and though it be attainable only in a few situations, yet it deserves to be more generally employed. The best sludge is completely covered with grass: it is cut out of the marshes, to the depth of a spade, and, during the summer, is carted upon the land; on the surface of which it is spread, and suffered to remain in small clods, till it has become thoroughly mellowed by the winter frosts. It is then pulverized, by passing a harrow over the soil, after which it is ploughed-in with a thin furrow, for spring corn.

The proportion of this manure necessary for an acre, varies in different places, according to the nature of the ground; but, in general, it will be advisable to spread as much as will form a coat, or stratum, about an inch and a half or two inches in thickness. In some

parts of Lancashire and Cheshire, sea-sludge is occasionally employed as a substitute for marle, to which it is greatly superior, both on account of its ameliorating properties, and the longer duration of its effects; instances having occurred, in which land, manured with such mire to the depth of two inches, has retained its fertility *thirty years*.

SEA-WATER, denotes the salt-water of the ocean.

The salts which this fluid contains, are, 1. Common marine, or culinary salt, compounded of fossil alkali, or **SODA**, and marine acid; 2. Salited magnesia, or a saline substance formed by the combination of marine acid with magnesian earth; 3. A small portion of selenite, or gypsum.—The quantity of saline matter obtained from the water of the British seas, is estimated by NEUMANN, to be about one ounce in each pint.—See also the article **SALT**, p. 14.

Sea-water is of great utility for various purposes. It affords an excellent manure, either sprinkled on land, by means of the machine described in the article **KITCHEN-GARDEN**; or, when it is mixed with putrescible matters, formed into a compost, and distributed over the soil. In a medicinal view, Dr. RUSSEL (*Dissertation concerning the Use of Sea-water in Diseases of the Glands*, &c. 8vo.) states the following cases, in which this fluid may be drunk with advantage, namely, in all glandular obstructions, as well as in swellings of the neck, and other parts; in all cutaneous diseases; in recent obstructions of the liver and kidneys (provided the stone in the latter be not large); in bronchocele, or tumors in the wind-pipe; and, lastly,

ly, for the prevention of the bilious colics, to which mariners are frequently subject.

As many persons, afflicted with the complaints before mentioned, have not an opportunity of resorting to the sea-side, for the benefit of the water, different expedients have been devised, to preserve this fluid from putrefaction. For such purpose, Mr. HENRY made a variety of experiments, which are related in the first vol. of the "*Memoirs of the Literary and Philosophical Society of Manchester*:"—the results of these, however, exceeding our limits, we shall merely observe that, from his first attempt, two scruples of quick-lime appear to be sufficient for preserving one quart of sea-water.

To purify the sea-water from its saline ingredients, so as to render it fresh, is an object of the greatest importance to navigators; for various accidents may happen, by which the stock of this necessary article on ship-board may be spilt, or become corrupted.—In the year 1734, Mr. APPLEBY discovered a process, which for a short time was adopted in the Navy. It consisted in distilling sea-water with a certain quantity of *lapis infernalis* (which has since been discovered by Dr. BURTON to be simply the rough *salt of tartar*), and calcined bones, or rather quick-lime; but such method was soon disused, on account of the difficulty with which it was attended, and the disagreeable taste it imparted to the water. Dr. B. therefore proposed, as a substitute for Mr. APPLEBY'S ingredients, the distillation of sea-water with soap leys, in the proportion of one quart of the latter to 15 of the former; which he asserts (in his *Safe, Easy, and Expeditious Method of*

procuring any Quantity of Fresh Water at Sea, &c. 8vo. 1755), will produce 12 gallons of fresh water; but the objections before stated have also been applied to this process.—Dr. HALES recommended pulverized chalk; which, however, is said to be too expensive, and does not improve the taste of the saline fluid.

Sea-water may be easily divested of its salt taste, by distilling it with wood-ashes, particularly with those obtained from the beech-trees. The same desirable object may be effected, by filtering the fluid through sea-weed; and we conceive, that other marine vegetables might be employed with equal advantage. But the most simple apparatus is that invented by Dr. LIVING, for which he received a reward of 5000*l*. By this contrivance, all stills, still-heads, &c. are rendered unnecessary; because the common boiler or kettle belonging to a ship, will serve as an effectual substitute: with this ought to be connected, a plain tube made of plate-iron or sheet-tin, that may be easily procured on board. As soon as the sea-water is poured into such vessel, the tube must be fitted to the lid or cover, round which a piece of wet linen may be applied, to adapt it the better to the mouth of the new still. When the water boils, the vapour should be suffered to pass freely for a minute, in order to clear the tube, which is then to be constantly moistened, by passing a mop dipped in the sea along its upper surface. The distillation should be continued till three-fourths of the water be drawn off, when the brine ought to be taken out: thus, any quantity of pure water may be obtained, without the aid of any ingredients.—

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The utility of this expedient is obvious ; and we trust that it is, or at least will be, generally adopted on board of every ship that is bound to a distant port.

SEA-WEED. See MANURE, vol.iii. p. 160.

SEA-WOLF, or *Anarrhicas Lupus*, L. a voracious fish that creeps in the manner of eels, and in the spring frequents the shores of Greenland, Iceland, and Norway, as likewise the coasts of Yorkshire and Scotland, where it is caught ; measuring from four to seven feet in length.

The Sea-wolf is one of the most ferocious inhabitants of the ocean ; its head is somewhat flat on the top, and is furnished with numerous teeth, which are so strong as to make impressions even on stones and anchors. Its food consists of prawns, crabs, lobsters, and other testaceous fish, which it devours, together with their shells.

These fish, when taken, bite with uncommon severity : the fishermen, therefore, knock out their fore-teeth, and kill them by blows on the head. Their flesh being very rank, is relished only by their captors, who eat it both in a fresh, and in a dry or salted, state.—The reputed toad-stones (*Lufonites*) are supposed to originate from the petrified teeth of the sea-wolf.

SEA-WRACK, or *Fucus*, L. a genus of vegetables, comprehending 145 species, 85 of which grow on the British coasts : of these we shall state the following as the principal :

1. The *serratus*, or SERRATED SEA-WRACK, is perennial, growing to the height of about two feet, and varying from a green to a yellowish or olive colour.—It is employed by the Dutch for covering or packing

lobsters and crabs, that are to be conveyed to a considerable distance, because it keeps them alive much longer than any other species of this plant ; nor does it easily ferment, or become putrid.

2. The *vesiculosus*, COMMON SEA-WRACK, or SEA-WAURE, is perennial, and grows to the height of one foot ; producing its fructified parts in the months of July and August.—It is an excellent manure ; for, being strongly impregnated with saline particles, these are gradually imparted to the ground on which the plant is spread, and thus fertilize it in a remarkable degree. Indeed, if land be properly dressed with this maritime vegetable, it is asserted, that its efficacy will continue unexhausted, for seven or eight years ; an advantage which dung does not possess, as it requires to be renewed every second or third year.

Beside its utility as a manure, the Sea-waure serves in Jura, Skye, and other Hebride islands, as a winter food for cattle, which regularly frequent the shores for it, after the tide has ebbcd. The inhabitants of these isles, also, dry their cheese without using any salt, by covering it with the ashes of this plant ; which abound with saline particles to such a degree, that they produce one half of their weight in fixed alkaline salts.

Farther, we are informed by LINNÆUS, that the inhabitants of Gothland boil the Common Sea-wrack together with a little coarse meal, by which they prepare a kind of wash for their hogs ; and that the poorer classes, in Scania, not only thatch their cottages with it, but also employ it as fuel. The most profitable use of this plant, however, is that of making *hemp*,
or

or pot-ash, which affords employment to many industrious families. So lucrative and highly esteemed is this plant, that the natives of the Western Isles have even rolled large masses of stone and rock into the sea; with a view to promote and extend its growth.

With respect to its medicinal properties, also, the Sea-waure deserves particular notice.—Dr. RUSSEL (in his work quoted in the last article) recommends the saponaceous liquor found in the vesicles or bladders, that abound beneath the leaves of this plant, as a powerful resolvent in dispersing scrophulous and scorbutic tumors of the glands. He directs the patient to rub such swellings with these bladders, having previously bruised them in his hand, till the part be thoroughly penetrated with the mucus; after which they are to be washed with sea-water. Another method of employing the common sea-wrack, is by infusing 2lbs. of the vesicles above mentioned (which ought to be gathered in July, when they abound with viscid juice) in a glass vessel containing one quart of sea-water, for the space of fifteen days; at the expiration of which, the liquor will acquire the consistence of honey. It is next to be strained through a linen cloth; the tumors must be daily rubbed, and then cleansed in the manner already directed. By this treatment, he observes, not only scorbutic and scrophulous indurations, but even scirrhus swellings in the breasts of females, have been successfully discussed. Lastly, by calcining this vegetable in the open air, Dr. RUSSEL obtained a very black saline powder, by him called *vegetable æthiops*; and which has

been highly extolled both as a resolvent, and also as a dentrifice, for correcting the scorbutic laxity of the gums, and removing all foul matters from the teeth.

3. The *palmatus* (*Ulva palmata* of Dr. WITHERING), PALMATED SEA-WRACK, DILLS, DULLS, DULLESH, or DULSE, abounds on the coasts of Scotland, on those of the contiguous islands, and on the shores of Northumberland. Its substance is membranous, pellucid, and thin; of a greenish or reddish colour: its height varies from five to six, and sometimes to twelve inches.—This species, after being soaked in fresh water, is eaten either boiled or dried; in which latter state, it acquires a flavour, somewhat resembling that of violets; and, according to BECHSTEIN, the sweetness of *sugar*:—yet, unless it be dried in close vessels, no saccharine but *saline* particles will appear on its surface; because the former are dissipated in the open air; a remark for which we are indebted to OLAFSEN, the Icelandic traveller.—The dulse is sold in a dry state, in the streets of Dublin; and Dr. RUTTY observes, that it is supposed to sweeten the breath, and to destroy worms.—In the Isle of Skye, this plant is occasionally boiled in water, with a little butter, and administered in fevers, with a view to promote perspiration; though, in this form, it is often attended with purgative effects.

4. The *ciliatus* (*laciniatus* of Dr. WITHERING), or FRINGED SEA-WRACK, abounds on rocks and stones, on the British coast; where it grows from four to five inches high; consists of a membranous, pellucid substance; and is of a red colour.

colour. It is eaten both in Britain and Ireland, like the preceding species.

5. The *pinnatifidus*, INDENTED, or JAGGED SEA-WRACK, or PEPPER-DILSE, is also met with abundantly on the rocks of Britain, which are covered by the tides. It attains two or three inches in height; and is of a yellowish-olive colour, frequently tinged with a reddish hue.—It is likewise eaten both in Scotland and Ireland.

6. The *esculentus*, ESCULENT SEA-WRACK, BLADDER-LOCKS, or TANGLE, is common on the rocks contiguous to the shores of Cumberland and Scotland; where it grows from five to ten yards in length, and one foot wide, being of an olive or green colour.—This species furnishes a grateful food for cattle; and its stalk, when boiled, affords a culinary dish in Scotland, as well as in some parts of England: the proper season for gathering this vegetable is the month of September, in which it is found in the greatest perfection.—The Esculent Sea-wrack has, farther, been recommended for restoring the natural appetite in the disorder, termed *pica*, or *longing*.

7. The *saccharinus*, SWEET SEA-WRACK, or SEA-BELT, abounds on the sea-shores. Its stem is from 2 to 12 inches in height, of an oval form, a leathery consistence, and of a tawney-green colour. If it be washed in the spring, and suspended to dry, a sweet saccharine matter will exude from its extremities; though not in such quantity as from the Palmated Sea-wrack.—The sea-belt is eaten, both when taken fresh out of the sea, and also boiled as a pot-herb.

SEAL, the COMMON, or SEA-CALF, *Phoca vitulina*, L. an animal

inhabiting the rocky shores of Britain and Ireland, as well as the coasts of Caernarvonshire and Anglesey, in Wales.

Seals have a smooth head, destitute of external ears, and are, in general, from 5 to 6 feet in length: though sometimes attaining the size of a small cow. These amphibious creatures prey entirely on fish, which they readily devour, though immersed under water: they belong to the mamillary class, and the female generally produces two young ones, early in autumn, which she suckles while in an erect posture, in the sea.

Seals are chiefly caught on account of their skins, and the oil extracted from their fat: the former sell at 4s. or 4s. 6d. each: and when dressed, are employed for covering trunks, making waistcoats, shot-pouches, &c.—The young of these quadrupeds, when about 6 weeks old, yield more oil than their emaciated dams: each furnishes about 8 gallons of that liquor.

In June 1799, a patent was granted to Mr. THO. CHAPMAN, of Bermondsey, Surrey; for his method of taking the wool, or fur, from seal and other skins, for manufacturing it into hats, &c. so that the skins or pelts, are less damaged than by any other process, being thus preserved for tanning them into any kind of leather.—For a minute description of the patent contrivance, we refer the curious reader to the 11th volume of the *Repertory of Arts*, &c.

SEALING-WAX, is a composition of gum-lac, melted and incorporated with resins, and afterwards coloured with some pigment, such as vermillion, verditer, ivory-black, &c.

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There are two kinds of Sealing-wax, generally used; the one is *hard*, for the sealing of letters, and similar purposes; the other *soft*, for receiving the impressions of seals of office to charters, patents, and other written documents.

In order to prepare the best *hard red sealing-wax*, take two parts of *shell-lac*, with one of resin, and one of vermilion; let these ingredients be reduced to a fine powder; melt them over a moderate fire; and, when they are thoroughly incorporated, form the composition into *sticks*.—Seed-lac may be substituted for the shell-lac, and instead of resin, boiled Venice turpentine may be employed.—A coarser kind of such sealing-wax may be manufactured by mixing equal parts of resin, and of shell-lac (or vermilion and red-lead, in the proportion of one part of the former, to two of the latter); then proceeding in the manner above directed. But, where large quantities of this wax are consumed, both the vermilion and shell-lac are generally omitted, so that it may be obtained at a much cheaper rate.

Black sealing-wax is composed of gum-lac, or shell-lac, melted with one-half or one-third of its weight of levigated ivory-black. To prevent the composition from becoming too brittle, Venice turpentine, in the proportion of two-thirds of the above ingredients, is usually added; as it likewise contributes to improve the beauty of the manufacture. These substances being melted, and properly stirred over a slow fire, the liquid is next poured upon an iron plate, or stone, previously oiled; and, while soft, it must be rolled into sticks; which are then expos-

ed to heat, till they acquire a glossy surface.

Uncoloured soft sealing-wax is commonly prepared of bees-wax 1lb.; of turpentine 3oz.; and of olive-oil, 1oz.: these ingredients are carefully boiled in a proper vessel for some time; till the compound become fit to be formed into rolls, or cakes, for use. And, in order to impart to it the requisite colour, one ounce or more of either of the pigments above mentioned may be added, stirring the mass till the whole be duly combined.

SEAVES. See RUSH the Common.

SEDLITZ, or SEYDSCHUTZ-WATER, is obtained from two mineral springs rising near a village of that name, in Bohemia. It has a very saline, bitter taste; and when used, is strongly laxative, but does not occasion the griping pains attendant on other violent purgatives.

The principal complaints which Sedlitz-water is calculated to relieve, are by HOFFMAN stated to be, 1. All cases of indigestion, accompanied by nausea, aversion to, or loathing of, food, and a painful compression of the chest; 2. Hypochondriasis, in which it is preferable to the aloetic and other strong purgatives; 3. Suppressions of the natural discharges; 4. The impaired state of health to which sedentary persons are peculiarly liable; 5. The tendency to hemorrhages in persons of a plethoric habit; and, 6. Obstinate cutaneous affections.—The dose varies according to the age and constitution of the patient: in general, from half a pint to a pint is sufficient; though some persons are obliged to drink two pints, in order to produce the desired effects.

SEED

SEED is the embryo contained in the fruit of vegetables; or, according to LINNÆUS, a deciduous part of a plant, comprising the rudiments of a new teraqueous production.

As all the various vegetables, fruits, &c. used in rural and domestic economy, are raised from seeds, the most eminent naturalists have bestowed particular attention on the subject of *selecting, preserving, and sowing* them.—We shall therefore concisely state the result of the most successful experiments, under these respective heads.

I. The **SELECTION** of seeds depends principally on a proper choice of grains and kernels, as well as roots from the most vigorous vegetables, growing under our own inspection: for, though it be conjectured, that the constant cultivation of a particular plant from the same seed, and on the same soil, will at length cause it to degenerate, yet numerous well-attested instances have occurred, in which the contrary effects have been evident. The most healthy stalks or stems should, therefore, be selected for bearing seeds; and such as attain to maturity at the earliest period in the season, ought to be preferred, especially if they grow at a distance from weakly plants of the same species; lest the fecundating farina of the latter be blown upon the stigmata of the former, and an inferior kind, or succession, be produced.

The proper time for gathering seeds, is the period of their perfect maturity, which may be ascertained by the dryness of the stem; because, when the latter begins to decay, it becomes "bleached by the oxygen of the atmosphere," and no farther nourishment can

then be conveyed to the ripe seed. The harvest should now be commenced without delay; and numerous hands be employed in threshing and housing it, lest any shower should fall, and thus a considerable portion be scattered on the ground.

II. Various expedients have been devised, for the **PRESERVATION** of seeds: the most simple consists in secluding them from light and heat in the bowels of the earth; where they will retain their vegetative power for several years. Thus, Dr. DARWIN mentions instances of mustard-seed producing a crop, on digging up soil, where it had remained in a state of rest for many years, and, "as was believed, *even for ages*." In the same manner, the best cucumbers and melons are raised from seeds, which are at least three or four years old; though some gardeners do not employ them, till they have been kept ten or twelve years.

Where seeds of a perishable nature are to be carried to, or brought from, distant places, it has been found useful to cover them with a thin coating of a mixture of pitch, resin, and bees-wax; which composition is termed *mummy*. Acorns and other seeds, thus managed, have appeared, on importation, as fresh as if they had been newly gathered.—Dr. DARWIN conjectures, that they might be safely preserved by covering them with soft sugar; and his supposition has been confirmed by the experiment of Mr. SNYDER (recorded in the 16th volume of the "*Transactions of the Society for the Encouragement of Arts*," &c.), who observed, that such as were packed in sugar, or among raisins, not only appeared healthy, but grew readily, while many others would not vegetate.

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getate. Lastly, Dr. D. farther thinks it probable that, if seeds were surrounded with newly burnt charcoal, or which has not been long exposed to the air, and then reduced to powder, they might be successfully kept in a fresh state, either during long voyages, or in domestic granaries.

III. The proper time for sowing seeds, entirely depends on the nature of the plants to be raised : and as we state such seasons, when treating of the respective vegetables, in the order of the alphabet, we shall here only mention the opinion of Dr. DARWIN, that the most advantageous method of disseminating native plants, is by suffering them to drop on the surface of the soil, as they fall from the parent stock ; being covered only by their deciduous leaves. But, when these germs of vegetation are imported from distant climates, such as will ripen in the same year, ought to be sown at an early period in the spring, and slightly covered with mould, in order to shelter them from birds and insects. Others, on the contrary, which do not completely germinate in one year, should be committed to the ground in the beginning of autumn, at the depth of an inch and a half ; both for protecting them from the frost, and from the depredations of birds. As these precautions, however, are not always a certain preservative, practical gardeners have recommended the steeping of valuable seeds in a strong solution of the liver of sulphur, for three or four hours, or such time as will be sufficient to penetrate the skin, or husk : by this simple expedient, all vermin will be effectually prevented from devouring the seed.

SEG, or *Carex*, L. a genus of perennial plants, comprehending 117 species, 45 of which are indigenous : the most remarkable of these are,

1. The *arenaria*, or SEA SEG, which commonly thrives in the loose and moveable sands on the shores, and flowers in the month of June.—Its creeping roots contain a large proportion of farinaceous particles ; from which, in times of scarcity, wholesome bread has been prepared : early in the spring, they are said to possess medicinal properties, not inferior to those of the SARSAPARILLA.

2. The *vulpina*, or GREAT SEG, abounds in marshes, and on the banks of rivers : it flowers in May or June.—Although this is a pernicious weed in meadows, yet the whole herb may be usefully employed as a substitute for straw, in packing goods liable to be injured by carriage ; for drying up swamps or morasses ; for the erection of dams ; and the sward for fuel, instead of peat : its seeds are likewise of service in feeding aquatic birds.

3. The *acuta*, or SLENDER-SPIKED SEG, grows at the sides of rivers, ponds, and ditches, as likewise in meadows ; it flowers towards the end of April or May. This species is divided into two varieties, namely, the *nigra*, or BLACK SEG, and the *rubra*, or RED SEG, from the respective colours of their flowers. Both are very noxious weeds ; as they not only stifle the growth of other grasses, but also afford food to insects, which are detrimental to the health of cattle.—The only economical purpose to which the Slender-spiked Seg may be rendered subservient,

servient, is that of being mixed, and cut, together with straw for feeding horses in the winter.

SEGRAM. See RAGWORT, the Common.

SELF-HEAL, the Common, or *Prunella vulgaris*, L. a native perennial plant, growing in meadows and pastures; bearing purplish flowers in the month of August.—It possesses an austere taste; and, though exploded from the list of *healing* plants, it may be eaten as salad, while young, and also boiled like spinach.—Cattle, in general, relish this herb; and bees collect honey from its flowers.

SELTZER-WATER, one of the most salubrious mineral fluids, is obtained from the springs, which rise in the vicinity of *Nieder-Selters*, in the Archbishopric of Triers; whence it is imported in stone-bottles, closely corked, and sealed with the episcopal cross; each vessel containing about two pints and a half English measure. It is somewhat pungent, and has a mildly saline and alkaline taste.

This water may be safely administered in a variety of disorders, especially in slow hectic fevers, accompanied with a profuse perspiration during the night; in all cutaneous eruptions; soreness of the stomach, heart-burn, and affections of the alimentary canal, in general; farther, in nephritic disorders, hypochondriasis, indigestion, and many other complaints.

Seltzer-water may, in almost every case, be taken copiously; the only precaution required, is that of preserving the bowels in a regular state; the usual dose being from a half to a whole pint;—on account of its grateful taste, and exhilarating properties, it forms a principal refreshment at the tables of the luxurious in Holland, and Germany.

Artificial Seltzer-water may be prepared, by adding, to each gallon of the lightest and softest water, one scruple of magnesia, two drams (or half that quantity in a state of dry powder) of fossil alkali, and four scruples of common salt; then saturating the whole with fixed air. This factitious mineral fluid is more pleasant to the taste than the natural water; and Sir JOHN PRINGLE observes, that it may be made to resemble the genuine *Pymont-water*, both in properties and taste; by adding eight or ten drops of the muriated tincture of iron, to one pint of such preparation.

SEMOLINA, a nutritious preparation, consisting of granulated wheat.

In 1780, a patent was granted to Mr. JACOB LEVY, for a method of making *Semolina*, which hitherto was imported from Poland, where it is called *Cracow-Groats*. It consists in grinding wheat, in an appropriate mill; after which the flour is separated from the *middlings*: the latter are then dressed four different times in a bolting-mill, and sifted through parchment sieves, till they are perfectly cleared from all bran and pollard.

Semolina forms a wholesome and light food for invalids and convalescents, being preferable to sago; as it perfectly dissolves in water, while the foreign drug undergoes only a partial solution: thus, considerable sums might be saved to the nation, which at present are annually paid for the importation of Sago.

SENEGA, a gum obtained from the *Mimosa nilotica*, L. and which greatly resembles that of arabic; possesses similar properties, while it is much cheaper; and is imported from Senegal, and the coast of Guinea, in loose or single drops, generally

generally of the size of an egg : their surface appears wrinkled, and less bright than the inner substance. It is destitute of smell, and has little or no taste.

Large quantities of Gum Senega are annually consumed by dyers and artificers ; but this drug is now seldom used as a medicine.—In Africa, it constitutes a principal ingredient in native dishes, being previously dissolved in milk ; though the solution, taken alone, is likewise a favourite repast of the negroes.—On importation, it is subject to a duty of 6½d. per cwt.

SENNA, or *Cassia senna*, L. an exotic shrub cultivated in Persia, Syria, and Arabia, whence its dried leaves are imported. They are of a yellowish-green colour, have a faint, though not unpleasant smell ; and a sub-acrid, bitterish, nauseous taste.—There is a spurious sort of this drug obtained from Tripoli, and other places ; but the fraud may be easily detected ; as the latter is of a fresh green colour, without any yellow shade.

Senna is an useful purgative, operating mildly, though effectually ; and at the same time promoting the secretion of urine. Its ill flavour may be corrected, by slightly boiling the leaves in water ; and, being apt to occasion gripings, it should be conjoined with any proper aromatic tincture, or distilled water ; dried lemon or orange peel ; fennel or aniseeds :—to increase its effects on the bowels, manna, rhubarb, tamarinds, figs, or prunes, are generally added. In a state of powder, the dose of senna is from a scruple to a dram ; but, when taken in decoction, from one to three or four drams are required.—On importation, it pays 6½d. per lb.

SEPTFOIL. See TORMENTIL, the Common.

SERPENT, an appellation given to an order of reptiles comprising, among other kinds, the VIPER and SNAKE.

Consistently with our plan, we cannot enter into any disquisition respecting the real or supposed fascinating powers of the reptile race ; we shall therefore state the remedies to be employed, in case a person should be unfortunately *stung*, or bitten. Such disaster is indicated by acute pain in the wound, accompanied with swelling, which is at first red, though it afterwards assumes a livid hue, and extends to the contiguous parts ; by uncommon faintness ; a quick, low, and interrupted pulse ; great nausea, attended with convulsive and bilious vomitings ; cold sweats, and sometimes by pains in the region of the navel. A sanious liquor, in most instances, exudes from the spot affected, round which arise small pustules : the patient's skin acquires, in the course of an hour, a yellow colour, resembling that usually observed in the jaundice.—These are the symptoms generally occurring in Europe ; but, in hot climates, and if the venomous creature be of a large size, the distressing scene is often closed by death.

Numerous remedies have been recommended for the cure of wounds inflicted by serpents. Dr. MEAD advises the poisonous matter to be extracted by means of a cupping-glass, or (which is preferable, if it can be effected) by the mouth ; in which the person sucking the part should hold a little warm olive oil, to prevent the lips and tongue from being inflamed ; though he observes, that the suction ought on no account to be deferred for want of oil ; as a delay of a few minutes might be productive of the

the most fatal consequence. — Where this operation, however, cannot be performed, Dr. M. proposes the application of a red-hot iron, or of alkaline salts to the wound; because, if the venomous matter be not absorbed and conveyed into circulation, these cauteries will destroy or change its nature. Lastly, in order to counteract the effects of such portion of the virus as may have been received into the system, he directs an emetic of ipecacuanna immediately to be taken; the operation of which must be assisted by the liberal use of oil and warm water. — The patient should now be placed in a warm bed, and a profuse sweat be promoted by means of cordials, which will carry off the remaining or latent effects of the poison.

The Abbé FONTANA proposed a *ligature* to be expeditiously applied: such bandage, indeed, if properly tied between the wounded part and the heart, will doubtless prevent the poison from operating fatally; but, as it is calculated to produce *gangrene*, we conceive excision by the knife is in all respects preferable.

Beside these preventive and curative measures, the use of the volatile ammonia has been attended with uncommon success, both in Europe and India; though FONTANA found it less effectual in his experiments on the poison of the viper. Dr. WRIGHT, therefore, directs 40 drops of the caustic volatile alkali, or of EAU-DE-LUCE, to be taken in any liquid, as soon as possible after the accident; the dose being repeated every five minutes, while the parts are continually washed with the same preparation. Farther, calcined harts-

horn, and oil of olives, externally applied, have produced beneficial effects; as also has a liniment, consisting of vinegar and butter, both when taken by the mouth, and rubbed on the wounded part.

SERRADILLA, or COMMON BIRD'S-FOOT (see vol. i. p. 266), a valuable plant, which thrives much better than saintfoin, or any other grass, on poor sandy soils: it is propagated by drilling the seed in rows, two feet asunder; but may be transplanted in the same manner as cabbages. This vegetable affords a grateful food to cattle of every description: it has not, indeed, been hitherto extensively cultivated, excepting by LANGFORD MILLINGTON, Esq. of Rushford, Norfolk; whose spirited experiments are recorded in the 27th vol. of *Annals of Agriculture*; but, as it promises to be productive of the greatest benefit to agriculturists, on the poorest lands, we trust that it will in future be generally introduced into such situations.

SERVICE-TREE, or *Sorbus*, L. a genus of native trees, consisting of three species, namely:

1. The *aucuparia*. See QUICKEN-TREE.

2. The *domestica*, (*Pyrus domestica* of Dr. SMITH) or TRUE SERVICE-TREE, grows in mountainous forests, principally in Cornwall, Staffordshire, and in the county of Worcester. It flowers in the month of April or May. — The fruit of this species being mealy and austere, like that of the Medlar, is a powerful astringent, and of considerable service in alvine fluxes, especially in dysenteries: hence we learn from BECHSTEIN, that the soldiers in the Prussian army, who were attacked with that epidemic in 1792, and to whom the *rah*, or even the berries,

berries, were given in sufficient quantities, uniformly recovered, while others died of the disorder. Nor is this fruit less useful for making cyder, and distilling brandy. Its wood is remarkably hard, and therefore valuable to turners for screws or cog-wheels; and to mathematical instrument-makers, for rulers, gauging-sticks, &c.

3. The *hybrida* (*Pyrus hybrida* of Dr. SMITH), BASTARD MOUNTAIN ASH, or BASTARD SERVICE, is found principally on mountains, where it flowers in the month of May.—This tree forms a singular variety of the two preceding species, and consequently partakes of their united properties. Its wood, however, is softer than that of the true Service-tree; and, though affording good fuel, its charcoal is greatly inferior to that obtained from the latter:—its berries are sweeter, and preferably eaten by birds.

The Service-tree is cultivated in Britain, principally as an ornament for diversifying extensive plantations; as it grows to the height of 40 feet. It is propagated by sowing the seed, a short time after the fruit is ripe, in pots, which must be sheltered during the winter; and, when the spring advances, it will be proper to plunge them in hot-beds, and to water them frequently, during dry weather. Towards the middle of October, the young plants may be removed to a warm spot of light soil, and placed one foot apart from each other, in rows two feet asunder. Here they should remain for three or four years; at the expiration of which, they ought to be transplanted to the place appropriated to their growth.

SERVICE-TREE, the WH. See HAWTHORN.

SERUM. See BLOOD.

SETTER-WORT. See HELLBORE, the Fetid.

SETON, in surgery, a kind of issue, or artificial ulcer, produced by passing the *seton-needle* through any of the larger muscles, and introducing a cord made of cotton or silk thread; in order to effect the discharge of superfluous, or morbid, matter.

Instead of describing the particulars, relative to this chirurgical operation, we shall merely observe, that setons occasionally prove useful remedies; especially where the body abounds with humours:—hence they are frequently made in the back of the neck, for diseases of the eyes; or between two of the ribs, in affections of the chest. As, however, a seton occasions a great degree of pain and irritation, it is not applicable to weakly and delicate persons, with whom the common issues generally agree. Nevertheless, either of these remedies are attended with similar effects; and the former, in particular, has been strongly recommended in ulcerations of the lungs and chest; nay, the late Mr. POTT was the first who successfully employed this expedient in various cases of *hydrocele*.

SETONS, in *farriery*, are occasionally applied to various parts of a horse's body, for the purpose of discharging matter from deep seated tumors or abscesses.

Setons are introduced by means of long, thin needles, dart-shaped at the point, and armed with a suitable cord. The size of the instrument, as well as the thread, depends on that of the part affected.

ed.—When matter is perceived to fluctuate in the tumor, the seton-needle, armed with a proper cord, is to be introduced at the upper part of the abscess; and the point conducted through it, so as to be brought out in an opposite direction. In some instances, it will be advisable to perforate the sound muscular flesh, and thus to form a depending orifice, for the more easy discharge of the matter: in either case, the cord should be previously dipped in some digestive ointment, and secured at both ends with a thread. Instead, however, of tying the cord together, some farriers preferably apply a small button of wood, or similar substance, to each end. Thus, when shifted, the thread may be drawn upwards and downwards; though, if its ends be conjoined, it forms a circle, and may always be removed towards the lower orifice. When the matter in the abscess appears to be wholly discharged, the cord may then be drawn out, and the wound be allowed to close. But, where the additional sore, thus occasioned, shews no disposition spontaneously to heal, it must be treated like a common Ulcer.

SHAD, or *Clupea alasa*, L. a well-known fish, inhabiting the rivers Thames, Severn, and Wye: it commonly weighs from 5 to 8 lbs.—It has a forked snout, and the body is marked with black spots.

In flavour, delicacy, and size, the Severn shad is superior to those frequenting the Thames: they generally appear in the month of April or May; and remain about two months.

Large quantities of these fish are taken by nets, in the vicinity of Gloucester, whence they are sent

to the London markets, and sold at a higher price than salmon.—The fishmongers distinguish this shad from that of the Thames, by the French name, *alose*.

There is a variety of the shad called the *twait*; great numbers of which are taken in the Severn, weighing from half a pound to 2 lbs.; and possessing no better flavour than those caught in the Thames.—The *twait* differs from the shad in its external characters, by having one or more round black spots on the sides; and generally three or four, situated one under the other, near the gills.

The shad of the Thames visits that river about the latter end of May, or early in June. Its flesh is very coarse and insipid; so that it affords improper food for those, whose organs of digestion are weak or impaired.

SHADDOCK. See ORANGE.

SHAGREEN, or **CHAGREEN**, is a kind of rough leather, prepared from the skin of the spotted SHARK.

For this purpose, the skin of the fish is first stripped, then extended on a table, and covered with bruised mustard-seed: it is thus exposed to the weather, for several days, and afterwards tanned.

The best shagreen is imported from Constantinople. It is of a brownish cast, and very hard; but, when immersed in water, it becomes soft, and pliable; and may be dyed of any colour.

Shagreen is often counterfeited, by preparing morocco leather in the same manner as the skin of the fish above mentioned: such fraud may, however, be easily detected by the surface of the spurious manufacture peeling or scaling off, while that of the genuine article

remains perfectly sound.--Shagreen is employed principally in the manufacture of cases for mathematical instruments, watches, &c. though it is sometimes used for covering books.

SHALE is a black, slaty substance, or a species of clay concreted into a stony consistence, and impregnated with a considerable quantity of bituminous matter. It is of various degrees of hardness, but does not emit sparks when stricken against steel; and, on being heated, it exhales a strong smell.

Large strata of this mineral are dug out in Derbyshire, as well as in those counties which contain fossil coal. On calcination, an acid is evolved, that combines with the argillaceous particles, and forms ALUM. The shale is next immersed in water, in consequence of which, the alum thus obtained is dissolved; and, after undergoing various processes, is formed into the masses usually met with in the shops.—It is computed by Doctor WATSON (*Chemical Essays*, vol. ii.) that 120 tons of the calcined shale will produce one ton of alum.

SHALLOT. See ESCHALLOT.

SHARK, or *Squalus*, L. genus of fish, comprehending 32 species, of which the following are the most remarkable:

1. The *Canicula*, Spotted Shark, or Dog-fish, inhabits almost every sea, and grows to the length of 4 feet: it attains a considerable age, is extremely voracious, and chiefly subsists on fishes. The skin of this species is beautifully spotted, like that of a leopard; when stripped off, it is manufactured into SHAGREEN, and is likewise employed in a dry state, for polishing wood, and for other purposes.

2. The *maximus*, Basking Shark, or Sun-fish, abounds in the Irish Channel, and on the Western Coast of Scotland. It is of a prodigious size, measuring sometimes 27 feet and upwards in length: it has been observed to derive great pleasure from basking on the surface of the ocean; during the heat of the day. Its liver is valuable, on account of the great quantity of oil which it contains: those of the larger kind yielding, upon an average, eight barrels each. The catching of the basking shark, and melting down its liver, afford employment to many industrious families:—the oil thus procured, is not only pure, sweet, and fit for lamps, but is also much used externally for relieving bruises, burns, and rheumatic pains.

3. The *Carcharias*, Great White Shark, or Requin, is the most formidable and destructive enemy of the mariner. It sometimes infests the British seas, but generally those of hot climates, where it grows to the length of 30 feet, and weighs from 3 to 4000 lbs. According to FUNKE, however, its weight occasionally amounts to 10,000 lbs. and the fish measures ten feet in circumference. An entire horse has been found in the stomach of this monster. And as it is probable, from the large teeth (*glossopetra*) sometimes dug out of the earth, that the requin, in former ages, must have been a still more bulky creature, naturalists have conjectured that such a fish, and not a whale, swallowed Jonah. The Great White Shark is particularly dangerous to swimmers, who have often lost one or more of their limbs, and not unfrequently been devoured entire. This fish is principally valued for its oil; as its flesh, though

though eaten in Norway and Iceland, is extremely rank and coarse.

SHAVE-GRASS. See **HORSE-TAIL**, the **Rough**.

SHAVING is the act of removing the hair from the beard, by means of a razor.

This operation greatly contributes to cleanliness; and though, from peculiar circumstances, a person be prevented from performing it regularly, yet the chin ought to be shaved every second day, or at least twice in the week, both to avoid the slovenly appearance, and the uncomfortable sensation, which such neglect necessarily occasions. For this purpose, the face ought to be previously washed with tepid water, and a thick lather laid on, with a proper brush. The part of the skin, from which the hair is to be cleared, should then be gently stretched with the fingers of the left hand, while the razor is applied in a *flat* position, and with a considerable degree of pressure *forwards*: being at the same time drawn obliquely *downwards*.

After the operation, the face ought to be washed with *cold* water, and the instrument wiped perfectly dry, either on a cloth or soft leather. For the proper management of **RAZORS**, *previously* to shaving, the reader will consult that article in *is* alphabetical series.

SHAWL, a species of fine woollen handkerchief, which forms a principal article of female luxury.

The finest shawls are imported from the East Indies, where they are highly esteemed, and cost from *fifty* to *two hundred* guineas each. As these, however, are too expensive for general use, Mr. JOHN PHILIP KNIGHTS, an ingenious manufacturer of Norwich, has invented a method of making

shawls, which are nearly equal in beauty, but far superior in point of durability, to the former; for which, in 1792, the Society for the Encouragement of Arts, &c. conferred on him their silver medal. The shawls of Mr. K.'s manufacture (*Transactions*, &c. vol. x.) cannot be easily distinguished from those of India; though they are sold at one-twentieth part of the price; and we conceive it our duty to state, that, if the handkerchiefs be 16 quarters square, and embroidered, they may be retailed at 20*l.*; or, if plain, at 8*l.* 8*s.*; if they contain 12 quarters, and be embroidered, their price is 15*l.*; but, without such ornament, they cost only six guineas. Mr. KNIGHTS also makes elegant *counterpanes*, four yards square; and which, he affirms to be equal to those of India, sold at 200*l.* each:—the principal demand for such goods, however, consists in *train-dresses* for ladies, and *long scarfs*, in imitation of the Indian: and, though the foreign articles of this description cost from 60*l.* to 80*l.* those manufactured at Norwich are sold for as many shillings.

SHEEP, or *Ovis*, a genus of quadrupeds consisting, according to LINNÆUS, of *three* species; though later naturalists admit only *one*, and consider the others as *varieties*. The principal is the *aries*, or common ram and ewe. Their bodies are covered with long, whitish, slender interwoven hair, which is termed *wool*; and, when shorn, the *fleece*:—they have eight fore-teeth in the lower jaw; and the heads of the males or *rurus*, are furnished with concave horns, remarkably wrinkled and curved.

In a wild state, the sheep is lively, robust, and able to support fatigue;

fatigue; but, when domesticated, and fed in pastures, it becomes timid, and resorts in the hour of danger to the shepherd and his dog, for protection.

Ewes generally breed at the age of 18 months; though the most experienced breeders never suffer them to increase their species, till they are at least two years old; and, as these animals are of considerable value, great attention is bestowed on their management at this period.

The first object therefore is, whether the breeder has sufficient grass to maintain the ewes and their lambs in the spring; or, whether he has a stock of turnips adequate to their support, till the pasture affords them food. The next consideration is the *choice* of ewes, in which case the same characteristic marks should be observed, as have already been stated under the article *RAM*:—another circumstance of great importance, is that of attending to the *breed*; because no certain degree of excellency can be attained in any species of cattle, unless the female possess an equal degree of *blood* with the male.

Ewes bring forth one, two, and sometimes three lambs, after a gestation of twenty weeks; so that the most advantageous period may, in general, be easily ascertained. The best time of yearning is the month of April; unless the owner have very forward turnips or grass, or the animals be *field-sheep*.—After the lambs are dropped, they must be managed in the manner already stated in vol. iii. pp. 59-60.—If, however, the males are designed for wethers, the necessary operation should be performed early, except when they are un-

usually weak; in which case it will be advisable to defer it, till they acquire sufficient strength: on weaning the lambs, their dams may be milked two or three times, in order to relieve their udders.

The most proper time for *shearing* sheep, is towards the middle of May, or at the farthest, about Midsummer; though some breeders defer it till the middle of July; because they suppose that an additional half-pound weight in every fleece may be obtained, by the increased perspiration of the animal. An early shearing, however, is preferable; for the new wool will thus not only gain time to *get a-head*, but the animals are also secured from the attacks of the fly; whereas, by delaying the operation, they become a more easy prey to the maggot; in consequence of which, they pine away, and lose all their flesh. But, previously to shearing, the sheep ought to be washed, and kept for a few days in a clean *rick-yard*, or in a dry pasture, whence they should be taken out separately: after they are shorn, it has been recommended to wash them with sea-water; or, where this cannot be procured, with a brine made of common salt and soft water; as such practice is calculated to prevent the various diseases, incident to these useful creatures.

Farther, it is usual to mark sheep when divested of their wool, with some colouring matter; in order to distinguish those belonging to different proprietors. The fossil known under the name of *red dye*, or *ruddle*, is generally employed for this purpose. Dr. Lewis, with the same intention, directs finely levigated charcoal (or preferably *lamp-black*), to be mixed with tal-

low.

low, over a moderate fire, in a proportion sufficient to produce a deep black colour, and a proper consistence. To render this compound more durable, he observes, that one-fourth, sixth, or eighth part of *tar* may be melted together with the tallow; the whole of which, however, will be readily discharged from the wool, by washing it in soap-water.—We understand, that Sir JOSEPH BANKS has, likewise, contrived a compound metal, from which the wool receives no damage.

With respect to the feeding and fattening of sheep, the most useful grasses and other vegetables have already been stated in the articles CATTLE (vol. i. p. 459-60), GRASS, MEADOW, &c.: hence our attention will now be directed to the nourishment derived from turnips, which experience has evinced to be one of the most lucrative methods. Some farmers turn the sheep into a field promiscuously, suffering them to eat the roots at pleasure; but this practice is by no means economical. Others divide the land by hurdles, and inclose the animals in such a space as they are able to clear in one day; advancing progressively till all the turnips are consumed. Another mode consists in digging or pulling up a sufficient quantity of turnips, and then admitting the sheep into the inclosure. The most advantageous expedient, therefore, is that of exposing these roots on the surface of the soil, and removing the sheep to a fresh place every day; and if a small quantity of pease (not exceeding two or three bushels per diem for 150 wethers) be allowed, the animals will eat both the turnips and their leaves, from which they will obtain additional

nutriment, and grow uncommonly fat. Farther, this management will be attended with beneficial effects on the soil; so that a piece of land, contiguous to the turnip-field, may be manured without the expence of conveying dung by carriage. And, as the ground on which turnips are generally cultivated, is too moist for sheep in autumn or winter, it would not only be *poached* by the opposite old method, but the roots would also be trodden in; and, from their great moisture, the animals become liable to be seized with the rot.

Sheep are subject to various diseases, in common with other cattle, such as that of being *hoven* (see vol. i. p. 464-5), &c.; but there are several disorders peculiar to the former; and which, it will be useful to state, together with the most approved remedies: namely,

1. The FLY-STUCK, which see.

2. The *Rubs*, or *Rubbers*, may be known by the restlessness of the animals, which rub themselves in every attitude; their skins being perfectly clean, without any trace of scab: when dead, their flesh assumes a greenish cast, but does not possess a bad taste. Sheep fed in fine meadows are more liable to be thus affected, than such as are pastured on poor soils: the disease generally terminates at the end of three or four months. No cause has yet been assigned for the *Rubs*; the malady having hitherto appeared chiefly in the county of Norfolk. Mr. YOUNG, however, informs us, that it originates from a whitish-yellow worm which settles in the brain; being about an inch and a half in length, and of the thickness of a common goose-quill. He observes that, at present,

sent, there is no prospect of cure ; but, if the generation of this insect could be discovered, the disorder may possibly be prevented.

3. The *Rot* ; and,

4. The *Scab* ; to which we refer.

5. *RED-WATER, OR BLOOD*. See vol. iii. p. 60.

6. The *Dunt* is occasioned by a vesicular collection of water in the head ; and for which no cure has hitherto been devised.

7. The *Fly* or *Maggot*, is an insect that breeds in the skin of sheep. If the animal be attacked before shearing, it becomes sickly and indisposed ; its wool, not yielding a sufficient quantity of *yolk*, affords a warm nest for the reception of the eggs, which are speedily hatched. The maggots immediately feed on the flesh of the sheep ; and, if they be not timely destroyed by the application of tar, the vermin will multiply so rapidly, as to destroy the animal in a short time.

8. *Giddiness* is conjectured to proceed from a worm, which insinuates itself under the horns, and causes the sheep to stagger, or reel : it may be cured by perforating those parts. Such distemper is also said to be induced by weakness, in consequence of poor *keep* : hence, relief may be afforded by removing the animal to better pasture, and allowing it a sufficiency of dry, nourishing food.

9. The *Hunger-rot* generally arises from poverty of winter provender, and may be ascertained by the leanness of the animals. The proper cure is an immediate change of fodder.

10. The *Tick* is a small, flat, brownish insect, that infests sheep ; and, if it be not speedily destroyed,

is very detrimental both to the flesh and wool : it has six legs, and a flat proboscis with three notches on each side ; by means of which it insinuates itself into the *pelt* or skin. Soon after the insect has thus settled, its legs drop off, and a scab is formed on the surface ; from which a small portion of ichorous matter is discharged. The scabby crust increases with the growth of the tick ; which, when arrived at its full size, nearly resembles that of a middling horse-bean ; and other insects are generated, to the great injury of the flock. In order to remove these troublesome vermin, it has been recommended to mix an ounce of corrosive sublimate, a quarter of a pound of bay-salt, and one ounce of cream of tartar (the last two articles being previously pulverized and sifted), with two quarts of soft water. The wool must be separated, and the diseased spots washed with this liniment two or three times, or oftener, if it be found necessary ; till the insects be effectually destroyed.

11. The *White Scour* is an uncommon looseness, occasioned by feeding sheep on putrescent vegetables ; and particularly on the shells of turnips, which have been suffered to lie on the ground for some time, after the animals have eaten or scooped out the substance of the root. As soon as this malady appears, it has been directed to pulverize and sift half a pound of dry bay-salt, which is first to be gradually mixed with a pint of old verjuice, and then with half a pint of common gin. The diseased quadrupeds must be separated from the rest of the flock, and three large spoonfuls be given to each ; the dose being repeated on the second

cond or third succeeding day, according to the exigency of the case.

12. The STAGGERS; 13. The FOOT-HALT; 14. The FOOT-ROT; 15. The PELT-ROT; 16. The GALL; 17. The RICKETS; 18. The FLUX; for which respective disorders the reader is referred to the alphabet.

19. The *Sheep-fagg*, or *Hypobosca ovina*, is an insect well known to shepherds. Its beak, consisting of two valves, is cylindrical, obtuse, and pendent; and the feet have several claws. These depredators live among the wool: they materially prevent sheep from thriving, in consequence of the severity with which they bite, and the blood they extract from the tortured animals; but, on account of the hard shell, or cover surrounding them, they are with difficulty destroyed.—The remedy suggested by Sir JOSEPH BANKS for curing the ROT (which see), may also be safely applied to the extermination of the *Sheep-fagg*; as thus the quality of the wool will not be in the least impaired.

20. *Obstructions in the lacteal ducts of the udders of ewes*, after the lambs are yeaned. The whole udder is covered with hard tumors or knobs, which, in a short time, become inflamed; and, if the parts affected be not speedily relieved, a mortification will take place in the course of 24 hours; and the animal must consequently perish. As soon, therefore, as the tumors appear, it will be proper to clip off the wool closely to the skin, and to open the principal milk vessels with a razor, or similar sharp instrument; the morbid matter should then be expressed, and a little fresh butter applied to the wound. The ewe, thus af-

fected, must be separated from the flock; and, though perhaps losing the use of one teat, she may be suffered to suckle her lamb; but, if both teats be diseased, the latter must be reared *by hand*, and the dam fattened for sale.

Sheep are farther liable to be *bitten, torn or worried*, from the carelessness, or impatience of the shepherd; or, from his dogs not being sufficiently *broken in*, as well as from the dogs of other persons; in consequence of which, the wool is often injured, and its value greatly reduced. Such accidents, however, may be prevented by proper care and attention.

Lastly, to preserve the health of sheep, it will be advisable that every farmer, or breeder, daily inspect his flock, and take particular care, that their tails be kept perfectly clean: nor should they be folded two successive nights on the same spot; being more tender and obnoxious to disease than other quadrupeds.

No animal is more useful than the sheep, which supplies man with food and clothing, while it furnishes numerous poor families with constant employment, in the various branches of the woollen manufacture. Its milk is very nutritious (see vol. iii. p. 201); and its flesh is a grateful and wholesome food (see MUTTON): farther, the principal parts of the skin are advantageously converted into parchment; and the clippings, or shreds, are boiled into GLUE; a substance which is indispensable to carpenters, joiners, and cabinet-makers. The horns are formed into buttons, and various other articles of conveniency: the trotters afford, on expression, an oil which is usefully employed in several branches

branches of the arts; and, when boiled, or baked, they furnish a nourishing repast.—Lastly, their Dung (see vol. ii. p. 198) is a valuable manure; and even their bones, when reduced to ashes, constitute a principal ingredient in the compositions for artificial stones, for ornamental chimney-pieces, cornices, &c.

On account of these numerous

useful purposes, the sheep has deservedly become an object of national consideration: it will, therefore, not be uninteresting to give a concise view of the different breeds, at present existing in Britain, and which is selected from Mr. CULLEY's practical *Observations on Live Stock*, 8vo. 2d edit. Robinsons, 1796.

				Average weight of fleece per lb.	Years old when killed.
1 Dishley	no horns	white faces and legs	long wool	8	2
2 Lincolnshire				11	3
3 Tees-Water				9	2
4 Dartmore Natts				9	2½
5 Exmoor	horned	ditto	ditto	6	2½
6 Dorsetshire	small horns	ditto	fine short wool	9½	3½
7 Herefordshire	no horns	ditto	very fine short wool	2	4½
8 South-Down	ditto	grey faces and legs	ditto	2½	2
9 Norfolk	large horns	black faces and legs	fine short wool	2	3½
10 Heath	ditto	ditto	coarse long wool	3½	4½
11 Herdwick	no horns	speckled faces and legs	short wool	2	4½
12 Cheviot	ditto	white faces and legs	fine short wool	3	4½
13 Dunfaced	ditto	dun faces and legs	ditto	1½	4½
14 Shetland	ditto	colours various	fine cottony wool	2½	4½

To these different breeds must be added, 1. The improved Gloucester, or the Cotswold Sheep, enlarged by the old Leicester Cross; producing full-sized and well-flavoured mutton: and, 2. The Staffordshire Cannock-heath Sheep, which resembles those of the South Down. Both these breeds are said to be susceptible of great improvement by crossing, and have been highly recommended to the attention of breeders.

Beside the native kinds, or varieties, of this valuable animal, we cannot in this place omit to mention the *Spanish Sheep*, which have within a few years been imported into Britain, with a view to improve the English breeds. Numerous experiments were consequently instituted, under the immediate superintendence of Lord

SOMERVILLE, and the Board of Agriculture; which have been attended with the most desirable success. Nay, that patriotic nobleman lately performed a journey into Spain, with the sole design of collecting a number of the finest Spanish sheep: and thence imported *twelve* rams. From his acknowledged skill in the symmetry of this valuable animal, we trust that they will be a real acquisition to the nation.

HIS MAJESTY, animated by the same laudable motives, has been pleased to give upwards of *one hundred* rams and several ewes, to different persons, who have engaged to conduct experiments by *crossing*; and we understand, that our Gracious Sovereign, in 1801, permitted some of his male and female sheep, of the Spanish breed, to

to be sold at reasonable prices, with a view to the national improvement of that staple commodity, WOOL.

SHEEP'S-BIT, or **HAIKY SHEEP'S-SCABIOUS**, *Jasione montana*, L. an indigenous annual plant, growing in meadows, pastures, and heaths, in dry and sandy situations; where it blows in June and July.—Its blue flowers emit a strong, musky odour; and are eagerly visited by bees. The leaves contain a sweetish mucilage; on which account they afford grateful food to sheep.

SHELL-FISH. See **CRAB-FISH**; **LOBSTER**; **MUSCLE** (vol. iii. p. 246); **OYSTER**, &c.

SHEPHERD'S NEEDLE. See **NEEDLE**, the Common Shepherd's.

SHEPHERD'S PURSE, the **COMMON**, or **SHEPHERD'S POUCH**, *Thlaspi Bursa pastoris*, L. a native plant, growing among rubbish, on road-sides, walls, in corn-fields, and gravelly walks; flowering from March to September.—Dr. WITHERING observes, that this herb evinces the influence of soil and climate on vegetables; as it thrives in almost any place, bears flowers, and perfect seeds, when only two inches high; while, in more favourable situations, it attains the height of two or three feet.

According to **BRADLEY**, the dried leaves of the Shepherd's Purse, reduced to powder, and taken in red wine, form an efficacious remedy in diarrhoeas, and other fluxes, where astringents are indicated.—The expressed juice of this plant, operates as a powerful styptic, especially in bleedings from the nose, when introduced into the nostrils.

SHERBET. See **PUNCH**.

SHINGLES, a disorder of the

erysipelatous kind (see **ROSE**), in which numerous pimples of a livid hue, arise in different parts of the trunk, but principally around the waist of the body; whence it is called *shingles*, or *girdle*: the eruption terminates in small blisters or pustules. It is seldom attended with fever; and, even in such case, the febrile symptoms are generally mild.

As this complaint requires a similar treatment to that already stated, under the head of **ROSE**, we shall only add the salutary caution to refrain from all external applications of a *repelling* nature; because such imprudent remedies, here likewise, cannot fail to produce melancholy effects.

SHIRT, a loose garment, generally worn next the skin.

The material of which shirts are usually made, is *linen*, though **FLANNEL** is doubtless a more natural and salubrious covering for the body, on account of its porous nature, the superior warmth, and many other advantages thence resulting, which have already been explained under that article. As, however, *fashion* requires this garment to be made of linen, we deem it necessary to observe, that the collar and wristbands ought to be made sufficiently wide, as too great tightness around the neck and wrists, is highly prejudicial to health; occasioning difficulty of breathing, and sometimes, even paralytic or apoplectic fits. Farther, cleanliness enjoins the frequent changing of linen, especially during the summer; and, though the propriety of such practice with patients has frequently been questioned, yet the shirt ought to be renewed, as often as can be safely and conveniently effected; because

cause it greatly contributes to promote insensible perspiration. This vestment, however, ought in all cases to be *perfectly aired*; as numerous maladies, and even premature death, have been occasioned by inattention to that circumstance.

SHOAD-STONE, a term applied to certain loose masses of a fossil, which is generally found at the entrance of mines.

Shoad-stones serve as useful guides to miners, in digging for ores; because, if these minerals, be very ponderous, it may with certainty be concluded that they contain antimony, or some other metal. Being principally found in Cornwall and Derbyshire, it is probable, from the large portion of *marcasitic* particles in *shoad-stones*, that **MUNDIC** may thence be advantageously extracted.

SHOE, a well-known article of dress, which serves to cover the feet.

Shoes are generally made of leather, the texture of which ought not only to be sufficiently close, to exclude moisture, but also pliant, or flexible; so that it may afford free scope for the motion of the foot: and, as it is an object of material consequence to be provided against the sudden changes of the weather, we refer the reader to the 3d volume, pp. 79-81, in which he will meet with the most approved methods of rendering leather *water-proof*.

Next to the substance of which shoes are manufactured, the most important consideration will be their *size*, or shape; which should in all cases be adapted to the foot. An easy shoe must, therefore, be of a sufficient length, and of a proportionate breadth. The soles

should be thick, and their extremities, round rather than pointed; in order to protect the toes from being injured by sharp stones, or other rough substances, that may occur in the streets or roads.—Such are the requisites for obtaining a convenient shoe; and, if these be not strictly observed, the necessary perspiration of the feet will be checked; warts and corns, with all their attendant pains, will arise; and numerous other maladies will be induced—extending their influence to other parts of the body. Beside these serious consequences, which persons wearing narrow or fashionable shoes, gradually, though certainly, experience, they also suffer from immediate fatigue and languor, when walking only to a short distance; whereas, by pursuing a contrary conduct, the feet are not only *more easy*, but those, who wear *proper* shoes, are enabled to undergo the longest *pedestrian* journeys, without receiving any material injury from such exertions.—See also the article **FOOT**.

SHOE, in *farriery*, is an iron plate of various degrees of thickness, designed to protect the feet of horses.

The common method of shoeing consists, first, in paring the frog, sole, and binders of the foot; so that, by clumsy management, a flow of blood is frequently occasioned: next, a heavy shoe, which is made somewhat concave on the side next the hoof, is then applied nearly *red-hot*. Farther, to prevent the frog from coming in contact with the ground, the *shoe-heels* are usually made either very thick, broad, and strong; or large cramps or caulkers are raised upon them. In consequence of this treatment, the frog is

is unnaturally elevated above the ground, and the *heels* are deprived of the substance which was originally intended to keep the *crust* sufficiently expanded. Thus, the former are forced together; and, while the latter is pressed upon the *coffin*, and the extremities of the *nut-bone*, the circulation of the blood is impeded; the frog gradually wastes; at length the whole hoof decays; and, by such injudicious practice, the numerous disorders incident to the feet of horses, which are known under the names of *FOUNDERED*, *FRUSH*, &c. are generally occasioned.

To remedy, or at least to prevent, these maladies, Mr. EDWARD COLEMAN has invented an *artificial frog*, for which he obtained a patent in February 1800. This frog may be made of any tough and hard material; for instance, leather, horn, or wood; but iron is preferable. In order to fix and remove such contrivance with ease, the toe of the iron frog extends beneath that of the shoe, and thus prevents the artificial frog from slipping forwards: next, a steel spring is fitted into an irregular groove in the iron frog, and fixed under the heels of the shoe; lest the frog should move either backwards, or in a lateral direction. Lastly, to ensure greater steadiness to this application, a leather strap is passed through a hole, in the heel of the frog, and then buckled round the hoof.

In April, 1796, a patent was granted to Mr. WILLIAM MOORCROFT, for his invention of an improved and expeditious method of manufacturing horse-shoes. His practice consists in cutting the shoes by means of dies, having previously prepared the iron; in con-

sequence of which, the shape of the shoe is not only more perfect, but the horse's foot is supported in a more effectual manner, than by the shoes in common use: thus, in the opinion of the patentee, many diseases to which that part is liable, may in future be prevented. —For a detailed account of this contrivance, the reader will consult the 6th vol. of the "*Repertory of Arts*," &c.:—some judicious hints, on the shoeing of that valuable animal, also occur in Mr. MOORCROFT's pamphlet, entitled, "*A Cursory Account of the various Methods of Shoeing Horses*," 8vo. 1800; which will amply repay the trouble of perusal.

SHOOTE. See *CALF*; vol. i. pp. 423-4.

SHORT-SIGHTEDNESS. See vol. ii. p. 244.

SHOT, a general name given to small and large balls, employed in fire-arms, but especially to those of a diminutive size.

Shot is made either of iron, or of lead: the former metal is chiefly used for cannon-balls; as the latter is for those of guns, pistols, &c.

There are different kinds of shot, according to the various purposes for which they are designed. The best for *fowling-pieces*, is known under the name of *Patent milled Shot*, and is of various sizes, according to the species of game that is the immediate object of pursuit. It is made in the following manner: Sheets of lead, the thickness of which corresponds with the intended size of the shot, are first cut into small cubic pieces: these are next submitted to a large, hollow, iron cylinder, that is mounted horizontally, so as to be turned by a winch; and, by their friction against the sides of the machine,

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they are rendered perfectly round and smooth.—See also *GRANULATION*.

SHOULDER, is the joint which connects the arm with the body. The principal affection of this limb is *LUXATION*, or dislocation (see vol. iii. p. 136), when the head of the upper arm-bone is forced from its socket. Such injury may be discovered by the swelling of the part; the inability to raise the arm; and violent pain attending the attempt: farther, the dislocated arm will be of a different length from the other; the head of the bone may be felt to be displaced from its natural situation; and a vacuity be perceived under the anterior part of the shoulder-blade.

In treating this complaint, the principal object will be to reduce the dislocated limb, with the greatest possible ease and expedition; in order to prevent a watery-swelling, which is apt to arise in neglected cases of long standing. Various means have been devised for restoring the joint to its former position; such as suspending the patient by the luxated arm over the step of a ladder, or the top of a door; and which have, in many instances, been attended with success, by the sudden jerk thus produced: but, by either of these expedients, the soft parts are liable to be lacerated, and the head of the bone to be fractured.

A more eligible method, therefore, is the following: after the patient is seated on a chair, his body must be secured by a strong belt passed around it, and held by assistants. The elbow should be bent, in order to relax the muscles. A firm leather bandage, from four to five inches broad, with strong straps, is next to be

tied round the arm, immediately above the elbow; when the arm should be gradually extended by assistants, pulling these straps, while another person withdraws the shoulder-blade. The extension and counter-extension must be regulated by the situation of the head of the bone. As soon as the latter has passed the margin of the socket, it will be returned to its place by the action of the muscles; an effect which is indicated by a loud crack. If, however, violent inflammatory symptoms should ensue after the operation, recourse must be had to fomentations with *Arquebusade* or *Goulard-water*, and the application of leeches.—At all events, the arm ought to be retained for some time in a state of rest, by a proper bandage, till it acquire its former vigour; especially if a new dislocation of the joint be apprehended. To obviate such an accident, blisters, frictions, and stimulants, applied to the shoulders, have frequently proved beneficial.

SHRIMP, the *LARGER*, or *Cancer crangon*, L. a diminutive shell-fish, provided with long slender feelers, and several claws, to which moveable fangs are attached: it has three pair of legs, and seven joints in its tail.

There is another kind of shrimp (*squilla*), which, in its external characters, nearly resembles that before described; though it is not above half the size of the former.—This species frequents the coast of Kent, and is sold in the metropolis, under the name of the *White Shrimp*.

As an article of food, shrimps are esteemed an agreeable repast, and are more easily digested than the larger kinds of shell-fish, such

as crabs, lobsters, &c. Hence, the former are frequently used, as an ingredient in sauces; and also eaten by epicures, with a view to impart additional relish to wine and rich ale.

SHRUB, in *botany*, a term denoting a low tree, of a diminutive size; or, a plant abounding with branches; and, instead of one single trunk, shooting forth several sets or stems from the parent-root. Such are the honey-suckle, holly, furze, &c.

The most hardy, indigenous shrubs, are the Box, and Ivy, which resist the severest winters, without receiving the least injury; while many other vegetables decay, in consequence of intense frost. Next, in point of hardiness, are the HOLLY, JUNIPER, and FURZE; but there are, besides, numerous ornamental shrubs, well calculated to diversify parks, lawns, &c.

Having already given a list of the most useful shrubs, under the article PLANTATION; and likewise stated the most advantageous methods of cultivating them, under the heads of CUTTINGS, LAYERS, PLANTING, &c. we refer the reader to those respective subjects.

SHRUB, a compound liquor, made of ardent spirits, orange-juice, and sugar.

Though we do not profess to be acquainted with the exact proportion of the ingredients employed by *shrub-drinkers*, yet it appears that one pint of the best coniac brandy requires to be diluted with the expressed and filtered juice of four or six China oranges, and half a pound of refined sugar.—Thus, a very palatable, but seductive liquor is produced; the effects of which, if frequently resorted to, cannot fail of undermining the

constitution of its votaries.—Having, on former occasions, explained the injurious consequences to be apprehended from the liberal use of ARRACK, BRANDY, GIN, and RUM, we shall, at present, only remark, that *shrub* is incomparably more *tempting* and insinuating, especially to weak females, than any of the *simple* spirits; because, in combination with *sweet* ingredients, this liquor imperceptibly stimulates, and gradually impairs the digestive organs, while it deprives such persons of that share of tottering health, which they vainly hoped to support.

SIGHT, is the exercise of the sense of vision. This faculty is one of the most important enjoyed by organized beings; as they are thus enabled to behold the beauties of Nature, and to avoid such objects, as may be productive of injury to the animal body.—Consistently with our limits, we cannot attempt to explain the peculiar structure of the organs of *sight*; and shall, therefore, briefly observe, that perceptions by the eye are effected by the refraction of the rays of light, through the medium of the crystalline humour; till they are collected into one distinct image on the *retina*, a membrane resembling a net; and which represents objects to the mind. Such rays are, during their passage through the *cornea*, or horny skin, broken and brought into mutual contact; after which they converge at the part containing the vitreous or transparent humour; and at which they separate, being again assembled together, and at length collected into as many points as the external figure represents.

Such is the manner by which we are enabled to behold objects in
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general: hence, the necessity of guarding the eyes with equal care against all injuries from without, as well as nocturnal excesses, becomes evident; for those tender and complicated organs are exposed to a variety of disorders, which, if not opportunely prevented or checked in their progress, may eventually induce total BLINDNESS.—Having already enumerated such affections, and pointed out the most appropriate treatment, under the articles EYE, GUTTA-SERENA, &c. the reader will consult them accordingly.

SILK, a fibrous production, partaking both of animal and vegetable nature: it is spontaneously drawn or spun by the insect, which will be the object of the next article. In this place, therefore, we shall only remark, that the filaments manufactured by this admirable creature, are extremely fine, so that they cannot be employed for any texture, in a *single* state; but, when combined or twisted together into several threads, by means of machinery, they form the strongest cords, or cloth, which is not only the most elegant, but also the most durable; though it may be procured at a cheaper price, in proportion to its fine quality, than either linen, or cotton.—*Raw silk* pays on importation (excepting that produced in the British colonies, in America, which is duty-free), 3s. 3½d. per pound; but, the duty of *wrought silk* amounts nearly to a prohibition.—See also STOCKINGS.

SILK-WORM, or *Phalæna Bombyx Mori*, a native of China, where it propagates itself on the mulberry-tree, the leaves of which serve as its only natural food. From the labours of this valuable

insect, we obtain SILK. The worm is hatched from yellowish eggs, the size of which is rather smaller than that of mustard-seed; and which are laid by a species of white moth, resembling a butterfly.

Raw silk has hitherto been imported into Britain, at a considerable annual expence; though, it now appears that England, in particular, possesses certain advantages over the southern climates of Europe, for raising silk; and which, if they were properly attended to, promise to be productive of a great saving to the nation. Thus, the eggs may, in this country, be preserved throughout the winter and spring, without an apprehension of being hatched before the mulberry-leaves appear; provided they be kept in cool places, and not exposed to the influence of the sun; whereas, in Tuscany, and other warmer parts of Europe, it is scarcely practicable to keep them in an embryo state, even for a few days.—Cold, thunder, and lightning, are equally destructive to these insects; and the countries above mentioned are subject to frequent storms, that endanger their existence; while Britain is almost totally exempt from the latter casualties. Nay, incalculable numbers of silk-worms are annually bred in Germany, Prussia, Sweden, &c. the climates of which are incomparably colder than the British, in general: hence, we trust, that the culture of silk will become a source of national profit.

When the egg is hatched, after being exposed to a warm temperature of from 60 to 70° of FAHRENHEIT, for a few days, a small black worm bursts forth, which is very eager for food, and ought to be supplied with the most tender mul-

mulberry-leaves. These will be greedily eaten for about eight days, at which period the worm is seized with a lethargic sleep, for three days; when it changes its skin. The creature now begins to eat again for five or six days, till it becomes subject to a second sickness or sleep, of a similar duration. A third and fourth stages of equal length succeed, so that in about 32, or 36 days, the silk-worm attains its full growth, being in this climate from one to two inches, but, in the warmer countries, from three to four inches in length.

After these *four* successive revolutions, the insect devours its food with great avidity for five or six days longer; at the end of which it becomes sickly, and in a manner transparent, when it requires no farther nourishment: at this period, it endeavours to find a convenient spot between dry branches, in a dark corner, and begins to *spin*; winding the silk which it draws from its bowels, around its own body, in an egg-shaped, roundish ball, denominated a *cocoon*. In this state, the worm remains for a fortnight, and upwards, inclosed in the centre of its silky habitation, whence it bursts forth in the form of a whitish moth, the wings of which are marked with yellow or brown lines: each female lays from 3 to 500 eggs, within two or three days, when she dies without tasting any food; and the male generally perishes in 24 hours, after having propagated its species.—It deserves to be remarked, that, during the first day of its labours, the silk-worm spins only the exterior, irregular texture, which is known, in commerce, under the name of *floret*, or coarse silk, serving for inferior stockings, gloves,

&c. On the second or third day, it begins to manufacture fine, connected filaments, extending several hundred yards in length; and, after this useful work, the creature completes its task, by forming its oval solid case, that resembles thin parchment, and in which it rests with safety, till it emerges in the shape of a butterfly.—Those *cocoons*, however, which are intended for the production of silk, ought to be selected within a week, and exposed to a hot oven, in which bread has been previously baked; with a view to prevent the worm from cutting the silk: on the contrary, such as are designed for breeding, ought to be carefully selected, namely, one male to each female; the cocoons of the former being somewhat pointed at one end, while those of the latter are generally of a larger size.

Having thus stated the various changes which silk-worms undergo, we shall proceed to point out the most proper vegetables for their subsistence. The best adapted for this purpose, are the leaves of the black and white MULBERRY-TREE; and, though we have remarked, vol. iii. p. 241, that this tree did not prosper in Britain, yet we understand from later information, that it may be advantageously cultivated, particularly in Cornwall; on which account the Board of Agriculture has been induced to recommend the breeding of silk-worms to the inhabitants of that county. As, however, mulberry-leaves cannot always be procured in sufficient quantity, the insects, if kept in a warm place, may be occasionally fed with those of lettuce. The young (neither moist nor withered), leaves of blackberries, vines, cowslips, ash, and

primaroses, have also been advantageously employed for this purpose; and it is asserted, that elm-leaves may be safely given to them; though some breeders observe, that such food inevitably causes their destruction.

In the management of silk-worms, *cleanliness* is an object of the first importance: hence, to facilitate the rearing of these profitable creatures, in this climate, the Rev. Mr. SWAYNE has contrived an ingenious apparatus, by means of which, large numbers may be bred in a small compass. It consists of a wooden frame, 4 feet 2 inches in height; each side being 16½ inches wide, and divided into eight partitions, by means of small wooden grooves, into which are introduced sliders, that may thus be drawn in, or out, at pleasure. The upper slider is of paper, and is destined for the reception of the worms, as soon as the eggs are hatched. The two next are formed of cat-gut, the threads of which are about one-tenth of an inch asunder; and are designed for them, when somewhat increased in size. The five lower sliders are constructed of wicker-work, with openings about a quarter of an inch square, through which the dung descends. Beneath all these are placed paper-sliders, to prevent the excrements from falling on those which are beneath them.—For a more detailed account of this contrivance, the reader is referred to the 7th volume of the "*Transactions of the Society for the Encouragement of Arts*," &c. where it is fully described, and illustrated with an engraving.

For the successful rearing of silk-worms, two essential objects ought to be attended to: 1. A suf-

ficient plantation of mulberry-trees; and 2. A proper stock of eggs for hatching, obtained from a climate similar to that in which they are to be bred. Besides, it will be advisable to keep the latter in a cool, but not in a cold place, till the tender mulberry-leaves are secured from the effect of night-frosts. The room in which the insects are managed, should be lofty, dry, and rather dark than too light. In short, they ought to pass through their different stages of life, in a uniformly warm temperature, not exceeding that of summer heat.

The quality of silk greatly depends on the manner, in which the raw threads are manufactured. In order to wind them off the cocoons, they are immersed into hot water for a minute or longer, when they are taken out and reeled by means of a machine; the threads are next twisted, and at length woven into ribbons, satins, &c.

Convinced of the great importance of the silk-manufacture to this country, the Society for the Encouragement of Arts, &c. have offered various premiums, with a view to promote the production of silk, in Britain. The successful candidates were, 1. Mrs. WILLIAMS, who received 20 guineas in 1778, for her attention to this object.—2. Miss HENRIETTA RHODES, to whom, in 1785, the Society presented their silver medal.—3. The Rev. Mr. SWAYNE, who obtained a similar reward in 1789; and lastly, Mr. SALVATORE BERTEZEN, on whom, in 1790, they bestowed their gold medal.

It would exceed the limits of our plan, to specify the different methods adopted by these patriotic individuals; and, as we have already selected a few hints, both from

from their communications, and from foreign authorities, the inquisitive reader will consult the 2d, 4th, 5th, and 7th vols. of the Society's "*Transactions*," &c. in which the various expedients practised by *silk-cultivators* in this country, are fully related.—Some practical remarks likewise occur in Mr. BERTZÉN'S "*Thoughts on the different kinds of Food given to Silk-worms*," &c. (8vo. pp. 47, 1s. Bew, 1789); a treatise worthy of perusal.

SILVER, one of the whitest of the perfect metals, is found in various parts of the globe, both in a native state, and alloyed with other ores.

The purest silver is imported by the Spaniards, from Potosi, in South America; and, though the lead-mines of England contain a portion of this valuable ore, yet it is so inconsiderable as not to defray the expence of separating it from lead.

In point of malleability, silver is somewhat inferior to gold; but it is much harder than the latter. If, however, both metals be melted together, they readily combine, without materially diminishing their ductility: hence, such alloy is generally employed for gold coinage.

Silver acquires hardness by hammering, and is therefore (when alloyed with a certain proportion of copper), not only used for coining money, but likewise in the manufacture of spoons, goblets, and other articles of *plate*.—Being, however, acted upon, in a peculiar manner, by sulphureous vapours, the surface of silver, if exposed to the air, easily becomes tarnished, and assumes a dark-brown colour. Various powders have, therefore, been contrived,

with a view to restore plate to its original lustre; but, as most of these compounds are apt to *scratch*, and injure the substance of such expensive utensils, we recommend the following preparation: Take one ounce of red calx of vitriol (*crocus martis*) and two ounces of calcined chalk; let both ingredients be pulverized, and passed through the finest sieve. This composition may be applied, either in a dry state, or, if the silver be unusually tarnished, the powder may previously be moistened with spirit of wine, in order to produce the desired effect with greater expedition.

This precious metal is, likewise, advantageously employed in pharmacy. When dissolved in the nitric acid, it forms the *nitrate of silver*; and, though a most virulent medicine, it has been given with great success, to persons subject to epileptic fits; in doses of a quarter of a grain, taken three times in the course of the day. It is farther useful externally, as a caustic, for consuming warts, and similar excrescences, not less than for preventing the growth of fungous flesh in ulcers; but, in all these cases, it ought, on account of its deleterious qualities, to be directed by the profession.

Silver pays, on importation, a duty of 2s. 10d. $\frac{9}{8}$; and, for home consumption, 4s. 1d. $\frac{1}{2}$. per ounce troy: its price, in the market, varies from 5s. 3d. to 5s. 10d. per oz.

SILVER-WEED, **WILD TANSY**, or **GOOSE-GRASS**, *Potentilla Anserina*, L. a British perennial plant, growing on the sides of paths and roads, and in low pastures; flowering in June and July.—GUNNER observes, that the Scotch and Irish, in times of scarcity, convert the roots of this vegetable

into flour and bread.—**GLEDITSCH** recommends the whole herb in the process of tanning calf-leather.—According to **Dr. WITHERING**, the leaves are mildly astringent: hence, when dried and reduced to powder, they have been used with success, in agues. The usual dose is a meat-spoonful every three hours, to be given between the paroxysms.—In the winter season, the roots of the Wild Tansey possess the flavour of parsnep.—The plant is eaten by cows, horses, goats and hogs, but refused by sheep.

SIMAROUBA, or *Quassia Simarouba*, L. an exotic tree growing in Guiana, and also in Jamaica, where it attains a considerable height and thickness.—Its bark is used in medicine, and is imported in long pieces of a yellowish colour, and a strong bitter taste. Being mildly astringent, it has been advantageously prescribed in doses of half a dram, in the form of a decoction, to be repeated every third or fourth hour, in bloody and other alvine fluxes, and towards the termination of putrid fevers; when it restores the tone of the intestines; allays their spasmodic irritation; promotes the secretions by perspiration and urine; while it disposes the patient to refreshing sleep. It should, however, be remarked, that such medicine would be highly improper, where an inflammatory disposition prevails, or a suppuration in the bowels is apprehended: nor can it be taken with safety, when the alimentary canal is obstructed.—In a state of powder, the Simarouba may be taken in doses from 10 to 20 grains, every three or four hours.

SIMPLER'S JOY: See **VERVAIN**, the Common.

SIMSON: See **GROUNDSEL**, the Common.

SINAPISM, signifies an external application, in the form of a soft plaster, or poultice, for the same purposes as a **BLISTER**, to which we refer.

The most usual sinapism is composed of equal parts of mustard-flower and crumbs of bread, mixed with such a proportion of vinegar as will render it of a proper consistence to be spread on linen, or cotton. In this state, the preparation is to be applied to the skin, till the latter become red and painful. The time required for producing such effect, is very unequal. In irritable persons, it will sometimes operate within 15 minutes; while, in others, it may continue on the part to be stimulated for 6 or 8 hours, without occasioning considerable uneasiness. If, however, the cataplasm be suffered to remain in its place, for some time after the commencement of the pain, it will draw a blister, which must be treated in a manner similar to that occasioned by the **Spanish-FLY**. (See vol. ii. p. 316.) But, if it be intended to operate by a gradual discharge of matter, or **SERUM**, (see **BLOOD**) the red or sore part may be kept in a moist state, by the repeated application of cabbage-leaves; and, according to circumstances, the sinapism may be renewed on the same spot.

The size of such blistering plasters depends on that of the individual, and the nature of the affection: thus, in children, they need not be larger than one, or at the farthest, two inches in diameter; but, in adults, they may occasionally be spread to the extent of from three to six inches and upwards,

wards, though of less breadth in proportion to their length.—The most usual parts of the body, on which these external remedies are calculated to produce speedy relief, are the calves of the legs, and the soles of the feet; especially with a view to abate pain arising from internal inflammations; to draw catarrhal and rheumatic humours from parts essential to life, towards the lower extremities; and to determine the morbid matter in the small-pox, so as to affect the face with less severity.—In rheumatic tooth and head-achs, the sinapism ought to be applied either to the nape of the neck, or to one of the upper arms; in inflammations of the chest, between the shoulder-blades; in apoplectic cases, to the neck, calves of the legs, and soles of the feet; in malignant putrid or nervous fevers, to the arms, thighs, legs, &c.—These domestic remedies are, in the instances before enumerated, of greater service than is generally supposed; and we are convinced from experience, that in the plurality of cases, they are infinitely more proper, safe, and efficacious, than the common *blisters* of the shops.

SINEW: See TENDON.

SISKIN, or *Fringilla spinus*, L. a beautiful bird of passage, which frequents Britain at uncertain periods. Its wings are spotted with yellow, being black at the points.—It is found most frequently in the county of Sussex, where it is known under the name of the *larkley-bird*, from its appearance during the season for sowing that grain.

The Siskin is very docile, and may be easily tamed: it is esteemed on account of the melody of its notes; and, being rather scarce, is sold at a greater price than its song

deserves. Although it chiefly subsists on the seeds of the fir and pine-trees, and in autumn, on those of thistles and burdock, yet it is also very partial to hop-seeds, committing great depredations in the gardens of that valuable plant. Hence, we refer the proprietors of hop-grounds to the articles BIRD-CATCHING, and BIRD-LIME.

SIZE, a viscid preparation, consisting of the shreds and parings of parchment, leather, or vellum, boiled in water; after which they are strained. It is employed by various artisans, but principally by painters and plasterers, who dilute it with a certain portion of water, and lay it on walls, and ceilings, before they are painted, or *white-washed*. Such liquor, however, emits a very disagreeable smell, which continues for several days, till it be perfectly dry: hence, different substitutes have been contrived, the best of which is obtained from *potatoes*: See vol. iii. p. 437.—There are other preparations, known under the names of *gold* and *silver size*, used by carvers and gilders, for applying gold or silver leaf to frame-work, as well as to various toys; and for burnishing glass. The former may be obtained, by first grinding fine bole on a marble stone, adding a little beef-suet, and tritulating the whole together. Next, some common size is to be dissolved in a double quantity of water, and mixed with the ingredients before mentioned.

Silver-size may be prepared, by grinding small portions of black-lead, and tobacco-pipe-clay (both being previously pulverized), with a little Genoa soap; after which it is duly incorporated with common size.

SKATE, or *Raja batis*, L. a voracious

racious fish, caught chiefly in the river Vistula, and, we believe, also in the Baltic and North Seas : it generally measures 16 feet in length, and is upwards of 2 feet in breadth, weighing sometimes two hundred pounds.—The spawning season of skates is in March and April : they are in the greatest perfection in the month of May ; but extremely thin and coarse from September to November.—The flesh of these fish is dressed in a manner similar to eels ; and, though esteemed delicate eating, it is calculated only for the active and robust.

SKATING, a species of exercise upon the ice, performed by means of *skates*, or wooden soles shod with iron, resembling in shape the keel of a ship : the whole is fastened to the feet, by means of straps.

Skating is a healthy and elegant amusement, well calculated for the severity of winter ; as it contributes to promote both insensible perspiration, and the circulation of the blood. Hence, a Society has even been formed in Edinburgh, under the name of the *Skating-club* ; the avowed object of which is the improvement of this recreation, so as to reduce it to the rules of art.—Excellence, however, can be attained only by observing the motions of a skilful skater. Let it, therefore, suffice to observe, that this innocent pursuit, especially in the South of Britain, where the winters are generally mild, is highly dangerous ; and ought not to be encouraged, unless the ice be of considerable thickness : at the same time, great precaution is necessary to retire from such enticing diversion in *proper* time ; because the body, being thrown into *sensible*

perspiration, is thus rendered more susceptible of cold ; and, unless due attention be paid to this circumstance, a fatal *CATARRH* will probably be the consequence.

SKIN, signifies the general covering of animal bodies.

Of all the different integuments, bestowed by Nature on organized creatures, that of mankind is doubtless the most admirable : it consists of three strata, each of which has its distinct purpose. The *first*, namely, the *epidermis* or *scarf-skin*, is thin and transparent, being destitute of nerves, as well as blood-vessels ; and covering the whole body. This part of the skin is void of sensation ; and consists of a series of laminæ or scales, which are increased by pressure and friction, becoming much thicker in one part of the body than in another ; for instance, in the hands and feet, which are perfectly callous in persons accustomed to hard labour. It preserves the interior parts from external injury ; and, if accidentally peeled off, or destroyed, it is spontaneously renewed.

Between the *scarf* and the *true* skins, there is a *second* coat, termed *rete mucosum*, a mucous membrane, disposed in a net-like form ; and which may be dissolved by maceration in water ; while the texture of the two former remains unaltered. This membranous substance contains the colour of the different nations of the globe.

The *third* integument is called the *cutis vera*, or true skin, and consists of numerous fibres, which are closely interwoven, so as to form a thick membrane which admits the filaments of the nerves. The surface of this skin abounds with numerous papillæ, or small glands,

glands, possessing a most exquisite sensation, and thus forming the sense of Touch, or feeling.

The skin is one of the most important parts of the human frame. On account of its being the seat of exhalation and absorption, it greatly contributes to the healthy state of the system; as it is the general outlet of insensible perspiration. Hence the indispensable necessity of paying strict attention to *cleanliness*; for the contrary conduct will prevent the absorption of the vital particles from the atmosphere, and consequently lay the foundation of various maladies. Thus arise the numerous *eruptions*, which are at present exceedingly prevalent; but which might easily be avoided, by a due regard to temperance, as well as by frequent bathing, or regularly washing the *surface* of the body.

The human skin, especially that of females, in the temperate climates, is naturally white and delicate; but, as age approaches, its elasticity and activity are, in a great measure, impaired: hence the desire of beautifying and improving "that index of health and years" has become universal. So long, indeed, as this desire does not exceed the limits of moderation, it is highly laudable; but, when the affectation of beauty in a manner absorbs the mental faculties, it becomes a pursuit unworthy of rational agents: nay, the most improper measures are eagerly adopted, with a view to repel or to conceal the approaching symptoms of decrepitude.—Designing perfumers, and empirics, have availed themselves of this "universal passion;" so that they impose their pernicious compounds on the giddy and undiscerning, who seldom see the folly of such practices, till their

complexion, constitution, and fortune, are equally exhausted.—See also COSMETICS.

SKIN, in commerce, denotes the hide, or pelt, which is stripped off the bodies of animals, in order to be prepared by the tanner, skinner, parchment-maker, or other artisan, and converted into leather, &c.—See HIDE.

In February, 1799, a patent was granted to Mr. JOSEPH WATT, for his improvements in the art of tanning, dressing, and converting, both foreign and English lamb, goat, and other skins, into leather, &c. without using either bran, salt, or lime.—It deserves to be remarked that, according to the patentee's statement, skins are dressed, by this new method, in *one-fifth* part of the time required by the former processes. Farther, a considerable saving is made, not only in workmen's wages, but also in the articles of bran, lime, salt, and coal; consequently a less capital is necessary. Lastly, the quality of the skins is thus improved; their colours become brighter; and the gloves manufactured of them, are more durable than such as have been made of skins dressed in the common way.

Another patent we shall notice, is that granted in April, 1799, to Mr. JAMES KNOWLES; for his invention of a method of dressing or preparing skins, &c.—The principle of this contrivance consists in omitting the old processes of *liming* and *drenching*, by which the quality of the leather is not only injured, but the various operations are retarded.—The patentee, therefore, directs the skins to be simply immersed in water, after the hair is removed; when they are to undergo the operation of *fleshing*.

Next,

Next, the pelt is again plunged into the water; and, after the necessary *studding*, or *striking*, it is ready to be tanned, tawed, or dressed.—See also TANNING.

SKIRRET, the COMMON, or *Sium sisarum*, L. an exotic plant, which is frequently cultivated in British gardens, on account of its utility for culinary purposes. It is propagated from the seeds obtained in the *second* year, but more advantageously by means of small roots or fibres. The skirret bears great resemblance to parsnep; tho' the former is so tender that it will scarcely admit of being boiled; for which reason it is frequently eaten as fruit, in a raw state: when stewed, however, it forms an excellent ingredient in soups.

The common skirret has an agreeable, aromatic flavour, and abounds with saccharine particles: hence it has been conjectured, that sugar might be advantageously extracted from the root; and M. MARGRAFF states, that he obtained one ounce and a half of pure sugar from half a pound of this vegetable.—BÖHMER observes, that it may more profitably be distilled, and converted into brandy.—In a medicinal view, it possesses diuretic properties, and is in a slight degree stimulant.

SKIRRET, the Broad and Narrow-leaved. See PARSNEP, the Water.

SLATE, a fossil, consisting of a compact stone, that may be split into thin plates.

There are several varieties of this mineral, chiefly distinguished by their colour, which is in general grey, intermixed with blue, green, or black streaks; though sometimes purplish, yellowish, brown,

bluish-black; and occasionally streaked with a darker hue than the ground itself.

Slate constitutes a part of many mountains: it is found in some counties of Britain, and Ireland, near the surface of the soil: the largest masses of it, however, are dug out in the Island of Eusdale, one of the Hebrides, whence slate is annually exported to England, the West Indies, &c. to a considerable amount.

The chief purpose to which slates are applied, is that of covering houses; for which it furnishes a strong and elegant roof. As the usual method of *slating* has, from experience, not proved sufficiently durable, Mr. RICHARD ELLIOTT obtained a patent in March, 1781, for a mode of covering houses, &c. on a more safe and eligible plan than that generally followed. His practice consists in cutting the slates in a rhomboidal form, so as to fold over each other. These are next laid in lime or putty, and fastened to the rafters, on boards, by means of nails or screws, either of wood or iron. This patent is now expired; and, as Mr. ELLIOTT's method promises to secure houses covered with this fossil more effectually from the effects of rain and moisture, than the common plan, we recommend the former to the attention of our readers; referring such as may wish for a more distinct idea of his practice, to the 12th vol. of the *Repertory of Arts*; where it is fully described, and illustrated with an engraving.

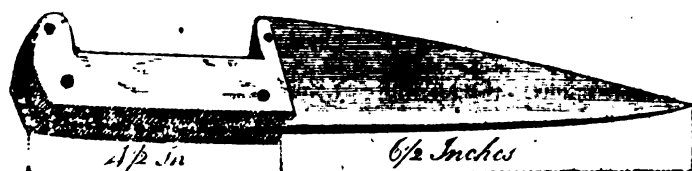
SLATERS, MILLEPES, or WOOD-LOUSE, *Oniscus asellus*, L. an insect which is generally found in cellars, beneath stones, and in cold humid places. It is of an oval

oval form ; of different colours ; and seldom exceeds half an inch in length.

Millepedes have a faint, unpleasant smell, and a slightly pungent, sweetish, though nauseous, taste. They have been greatly recommended in suppressions of urine ; in the jaundice ; for weakness of sight ; in obstructions of the intestines ; and various other complaints. Their efficacy, however, in these disorders, is doubtful. When dried, pulverized, and infused in wine, they are said to have afforded great relief in the whooping-cough.—In dropsies, and pituitous affections of the chest, GESENIUS directs the expressed juice of slaters to be converted into syrup, with an equal quantity of refined sugar, and to be taken in single table-spoonfuls by adults, or in a tea-spoonful by children, several times in the day : this preparation has, in many desperate cases, proved uncommonly efficacious.

SLAUGHTERING OF CATTLE, a term used to denote the killing of calves, oxen, or other horned cattle.

The instrument at present generally employed for this purpose, is a common *axe* ; by which the animal is at least stunned, in case it does not fall after one or two blows ; yet, as the *knocking down* of cattle carries with it an idea of ferocity, a milder and more humane method of terminating their existence, ought to be substituted for that practice. Such desirable object may be attained, by adopting the mode of slaughtering which prevails in Portugal ; namely, the “laying down cattle,” by separating the spinal marrow with a peculiar knife ; in consequence of which, the animal is *unerved*, and falls instantaneously : we therefore subjoin the following Cut, representing the instrument employed in that kingdom :



The whole knife here represented, is 11 inches in length ; the handle being $4\frac{1}{2}$, and the blade $6\frac{1}{2}$ inches. In order to use it, the person who is about to “lay down” an animal, must place himself in front of the latter, holding it by the horn in the left hand ; and passing the knife over its brow, through the vertebræ of the neck, into the spinal marrow.—For the knowledge of this practice, we are

indebted to the humane Lord SOMERVILLE ; who, during his late residence in Portugal, caused a person to be instructed in the use of the knife above delineated. His Lordship has liberally offered to comply with the request of those whose business is to slaughter cattle, and who may be desirous of additional information. He farther observes (in *The System followed during the two last years by the*

the Board of Agriculture, &c.) that the man alluded to; has laid fifteen oxen in a row "with more regularity and expedition than would at first, perhaps, be credited."—Lord S. likewise is of opinion, that if the practice of carters *head-lining*, or walking at the heads of oxen, were adopted in Britain, the animals would probably be induced to stand more quietly; in consequence of which the operation will become "as safe as it is easy."

SLEEP, is that condition of the body, in which the senses are not excited or affected by external objects; while the functions of life are regularly performed, though not with the same energy or celerity, as is observable in a waking state.

"Tir'd Nature's sweet restorer, balmy sleep," is one of those requisites, which are indispensable to the continuance of life and health: thus, providential Nature has appropriated the night for the recovery of that strength, which had been expended by exhausting the irritable principle during the day.

The disposition to sleep is indicated by a drowsiness pervading the whole system: the senses and muscles become languid; the head, unable to retain its erect position, bends towards the chest; the eyelids close; and, at length, the ideas become confused; and the intellectual faculties are suspended.

Sleep not only contributes to reinvigorate the muscular power, but also promotes nutrition; because the organs of digestion act, on the whole, more speedily and effectually in this state of rest, than during bodily exercise. Hence, many persons are accustomed to *take a nap*, regularly after dinner;

a practice which has, by some, been highly commended, for its invigorating the body, and enabling it to undergo additional fatigue; while others have censured it, as tending to induce corpulency, a phlegmatic or phlethoric habit, and various indispositions.—The relative propriety of this indulgence, however, depends on particular circumstances. Thus, if a person eat solid or hard food, or be naturally of slow digestion, a short sleep (not exceeding one hour, at the farthest) may be of service; but, in cases of debility, and great muscular relaxation, such practice ought by no means to be encouraged, particularly by the young; as each repetition will have an aggravating effect.

In taking this necessary repose, the body ought to be reclined on the left side, in a straight direction, with the limbs slightly bent; the head being rather elevated. The body ought, on no account, to be placed in a crooked posture; as it impedes the circulation of the blood, and pre-disposes the system to swoonings, or apoplectic fits. Lying on the back is equally improper; as it tends to produce frightful dreams, and numerous inconveniencies, especially the **NIGHTMARE**.

SLEEP OF PLANTS, is a certain faculty, peculiar to many herbs, flowers, &c. of assuming, during the night, a position essentially different from that which they bear throughout the day.—This change takes place principally towards the approach of night, in leaves and flowers; the appearance of which often varies so considerably, that the same plants can scarcely be recognized. During the night, their leaves are observed to rise or curl up,

up, and sometimes to be pendent, according to the nature and genus of the plant, in order to protect the flowers, buds, or young stems.— This period of rest is absolutely necessary to vegetables; their irritability being exhausted by the light and warmth of the day. The circulation of the sap, also, is less rapid in their dormant state; from which circumstance Dr. DARWIN conjectures that, as there is less wasted during their inactivity, it is probable that young plants may thrive more rapidly, in the same manner as animals are believed, during their youth, to grow faster when in a state of rest, than in that of exercise.

SLEEPING, is that state of the body, in which the animal functions are suspended.

The proper duration of SLEEP must be regulated, according to the different constitutions and ages of individuals. Thus, in the first six months of its existence, an infant may be allowed to sleep the greater part of the day; but, after that period, it will be necessary to abridge this indulgence, gradually, with the advance of years. For children, from the age of seven years to that of adolescence, and also for aged persons, eight or nine hours of nightly rest will be required; but for adults, and those who are not obliged to fatigue themselves with mental or bodily exertions, six or seven hours will be sufficient.

The proper hour for retiring to sleep, having already been stated under the article BED-TIME, we shall conclude the subject with a few remarks, on the practices occasionally observed in the nursery.

Children, and even infants, are sometimes prevented from going

to sleep, by a variety of circumstances, which maternal solicitude only can discover: we conceive it, therefore, our duty, to caution parents and conscientious nurses, against employing artificial means, and particularly opiates or narcotic substances, whether externally or internally, with a view to lull the child to sleep; as these detestable remedies tend to stupify the latent faculties, and to weaken the intellect of such tender constitutions. Equally absurd and injudicious is the practice of *terrifying* young people to sleep by threats; or of *wheeling* them by promises; for, in the former case, they early acquire sentiments of disgust and hatred, which have the most baneful influence on their subsequent conduct: in the latter, they become selfish; and, at length, it will be requisite to pay them for sleeping.

SLEEP-WALKING, or SOMNAMBULISM, a remarkable disorder, proceeding from an inflamed or disturbed imagination; and in which the patient's eyes are widely open; though he can discern no object: at the same time, he has the power of recollection; directs his walks to some particular spot; and, after arriving at the end of his nocturnal journey, he retires to bed, apparently composed; and sleeps calmly during the remainder of the night.

Dr. CULLEN considers this affection as an *active* species of the NIGHTMARE (*oneirodynia activa*), and consequently as originating from the same source.

The causes, however, which have generally been supposed to induce *somnambulism*, are: a very plethoric state of the blood, especially that towards the head; a disturbed imagination,

gination, in consequence of horrid dreams; or particular causes that harass the mind during sleep; and, according to LEVADE, convulsions of the brain.

Cure:—Where plethora is the cause, the first passages ought to be cleared by a powerful cathartic; and some blood should then be taken, either from the arm or from the foot; after which, alterative powders, consisting of nitre, cinabar, and crabs' eyes, in due proportions, have been prescribed with advantage.—Electricity, and frequent bathing, have occasionally proved of service; and it will farther be advisable, to place a vessel of water, or wet cloths, contiguous to the bed-side, so that the patient, by the sudden stimulus on the soles of his feet, be immediately awakened.—Should these remedies fail of success, it has been strongly recommended, by medical writers, to watch the patient, and to chastise him, as often as he is about to renew his nocturnal rambles; yet we do not approve of such coercive measures.

SLOE-TREE, BLACK-THORN, or SCROGGS, *Prunus spinosa*, L. an indigenous shrub, growing wild in hedges, and woods; flowering in the months of March and April. It generally attains the height of from 10 to 12 feet, and spreads its branches from the root; producing small, round, black berries in autumn, which possess a very austere taste, till mellowed by frost.

Being of very quick and bushy growth, the sloe-tree is well adapted for hedges and other fences; though it is not calculated for situations where its spreading roots might obstruct the growth of vegetables planted in its vicinity.—The wood is hard and tough; on

which account it is usefully converted into walking-sticks, teeth for rakes, and turnery-ware.—Dr. WITHERING observes that, from the effects which follow the punctures made by the thorns of this tree, he has reason to believe, they contain some poisonous matter; especially if such wounds be inflicted in autumn.—The young and tender leaves, when dried, afford, in his opinion, the best substitute for the foreign *teas*.—If bruised, and infused in currant or raisin-wine, sloes impart a beautiful red colour, and a pleasant rough, sub-acid taste, resembling that of *Port-wine*; a fact too well known to the dealers in that favourite and expensive liquor.—Characters impressed on linen, or woollen cloth, with the juice of the fruit, are said to be permanent. On adding green vitriol to this liquid, the shade is not changed; but, if it be employed for writing on paper, or dyeing linen, and afterwards exposed to the air, an indelible *black* colour will be the result, and which is superior to that obtained from the best galls.—The dried berries of the black-thorn dye-linen of a *red* hue, which, on repeated washing, changes to a durable *light-blue*.—The bark boiled in ley, also yields a *red* tinge; and, in order to facilitate the decortication of this shrub, it ought to be effected in the spring:—a decoction of the root, on adding a solution of bismuth, communicates a *cinnamon* shade to wool.—The blackish bark is farther, useful for preserving *cheese* from corruption; a fact attested by BECHSTEIN: the same rind, together with the unripe berries, may be advantageously used in tanning.

In a medicinal respect, a hand-
ful

ful of the flowers of the sloe-tree, either infused in water, or boiled in milk, and strained, affords a draught which operates as a safe and gentle purgative.—According to Dr. WITHERING, the bark, when reduced to powder, and administered in doses of two drams each, has cured some species of the ague.—An inspissated extract of the same substance forms an excellent *astringent*, which is frequently employed on the Continent, as a substitute for the more expensive, but less efficacious Indian drugs of this description: and it is highly probable, that such preparation might, in many cases, be employed with safety, instead of the Peruvian bark, which is seldom obtained in a genuine state from the shops.—The leaves of the sloe-tree are eaten by horses, sheep, and goats: the bark is relished by hares, deer, and other wild quadrupeds.

SLOE-WORM. See BLIND-WORM.

SLUDGE. See SEA-SLUDGE.

SLUG, or NAKED SNAIL, *Limax*, L. a genus of insects, comprehending eight species; which differ only in colour; being black, white, reddish, ash-coloured, &c.

These reptiles are destitute of shells, having four feelers placed above the mouth, and which are protruded, or drawn in, at pleasure: they move at a very slow pace; and, from the clamminess of their skin, leave slimy, shining marks, wherever they pass.

Slugs infest gardens and fields, where they do great damage; particularly if the land be stocked with lettuces, cabbages, or turnips. Hence it has been recommended, to strew the ground with lime in the evening, at the rate of 15 bushels per acre; by which expedient they will be completely de-

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stroyed; as they advance from their hiding places during the night, in quest of food. These vermin may also be exterminated, by admitting poultry to the ground infested with them. But, as many husbandmen have not an opportunity of *liming* their fields or gardens; or of keeping a sufficient stock of geese, fowls, ducks, &c. for this purpose, we think it useful to observe, that they may be effectually reduced in number, by the simple expedient of collecting them by the hand, when perambulating the ground very early in the morning, especially during cloudy and damp weather. The destruction of these vermin may, farther, be facilitated by strewing withered leaves, or the putrescent stalks, of cabbages and turnips, on the surface; as they devour the latter with avidity.

One of the most expeditious modes, however, of extirpating slugs, is that communicated by Capt. SHANK, to the Bath and West of England Society; and which is inserted in the 8th vol. of their *Letters and Papers*. He directs a sufficient quantity of coal-tar to be poured into a barrel, and to fill the vessel with water, which must be suffered to stand for two or three days; when it will become powerfully impregnated; and, if poured on the vermin, will kill them instantaneously. He farther observes that, if such *tar-water* be sprinkled on the land, by means of a watering-pot, both before and after sowing, it will infallibly prevent their depredations.

SMALLAGE. See CELERY.

SMALL-POX is a contagious eruption, attended with inflammatory fever. The patient complains of head-ach; nausea, and vomiting;
heat

Heat and cold; respiration is difficult, and the breath fetid. Generally, on the third day, small red spots appear, particularly on the face and about the neck, which gradually spread, sometimes over the whole body, and rise into pimples till the fifth day, when they are observed to contain fluid matter: in the course of eight days, they begin to suppurate; a change which may be ascertained by their opaque, white, and at length yellow colour. A crust is then formed, which generally falls off, after the twelfth day, frequently leaving depressed scars or pits in the skin. Such is the course of the disease, in its milder state.

The small-pox is divided into two species, 1. the *distinct*, and 2. the *confluent*: in the former, the pustules are few and separate, with circular margins, being elevated, and the fever ceasing on the appearance of the eruption. In the latter, the pustules are numerous and close, with irregular margins, flaccid, and low: the fever continuing even after the pustules are visible; and all the symptoms are more violent.—Convulsions, which in many cases occur, before the eruption is discernible, are seldom attended with danger; but, if intervening in the progress of the disease, they often terminate fatally. It may, likewise, be considered as a favourable circumstance, if the eruptive fever cease with the appearance of the pustules, and the patient feel himself more vigorous on the subsequent day. The event, however, greatly depends on the fever; which generally commences at the period, when real matter is formed in the pustule; but, if it appear before that stage,

the worst consequences may be apprehended.

The small-pox is occasioned by a specific contagion, which may be imparted to the body, either by the atmosphere, or by the introduction of a small portion of matter into a wound:—See INOCULATION.

Cure:—If the disorder be mild, and attended with such symptoms as have been mentioned in the *distinct* small-pox, the recovery should be chiefly entrusted to Nature, while every attention must be paid to diet and regimen. Previous to the appearance of the pustules, the patient should be kept in a cool, but dry apartment, well aired, and abstain from all animal food; though weak broths may be occasionally allowed: on the other hand, he may eat all vegetables of a cooling and mucilaginous kind; boiled and roasted fruit; preparations of pearl-barley, sago, cherries, currants, mulberries, &c.; but cheese, pastry, and confectionary, are very pernicious. The beverage should consist of barley-water acidulated with vinegar or cream of tartar; or one part of milk, mixed with three parts of water, either to be taken lukewarm; but wine, beer, coffee and tea, ought to be prohibited. Too great indulgence in sleep is also injurious, particularly on feather-beds, which always increase the heat and fever: it would be more advisable to lie on mattresses, and be lightly covered.—It is a common prejudice of the vulgar, not to shift the linen during the whole complaint; but this change cannot be too strongly inculcated in a disease, where perspiration and eruption render the covering of the skin impure; though great precaution is required, that every
new

new vestment be perfectly aired. If the patient be an adult, and of a plethoric habit, blood-letting may, in this stage, be resorted to, with advantage.

In obstruction of the bowels, none but the mildest laxatives can be given: it would, however, be more advantageous to regulate the body by emollient clysters, each being composed of half a pint of whey, a table-spoonful of honey, two table-spoonfuls of sweet-oil, and a small portion of common salt; such injections to be repeated, till they produce the desired effect. Similar means may be employed with benefit, in cases of convulsions.—Where the throat happens to be affected, the most suitable remedies will be, warm fomentations applied to the neck, and mustard-poultices to the feet; while the throat should be gargled with vinegar and water.—But, if the patient be of a weak constitution, or be reduced in strength, recourse must be had to corroborants, such as Peruvian bark, taken by the mouth, and injected in clysters; snapisms, and other stimulants to be devised by the profession. When a looseness threatens to increase this state of debility, small doses of tincture of rhubarb with spearmint water, in which gum-arabic is dissolved; and the use of the bark, will be the remedies here indicated.

After the eruption has taken place, the fever generally subsides; in which case it is advisable to abstain from all medicines, and observe the diet above pointed out, unless the pustules disappear again, when blistering-plasters ought to be applied to the calves of the legs without delay, and small doses of camphor taken internally; or parti-

ley-root boiled in milk, frequently eaten; with a view to encourage the eruption: a few drops of laudanum, given in the morning and evening, have often produced that effect, especially where convulsive symptoms were obvious.

If, during the *suppurative stage*, or what is termed the turn of the disorder, the fever be inconsiderable, the same diet will be proper, as was directed at the commencement of the disease; but, should the febrile symptoms re-appear, or the pustules suddenly sink (a circumstance which always denotes great danger), blisters must immediately be applied to the extremities; the legs be rubbed with flannel; and the feet bathed in tepid water. In this particular situation of the patient, medical advice is indispensably necessary, and ought to be *speedily* procured.

When the scurf begins to peel off, a gentle laxative, twice, or three times a week, will, in general, prevent many of those secondary complaints which frequently succeed the small-pox: or, if the eyes be swollen and inflamed, the application of warm bread and milk with Goulard-water, and leeches to the temples, will, in most cases, remove this local affection. After the inflammatory symptoms have entirely subsided, the patient may gradually resort to his former diet; observing, however, some precaution and moderation in the use of wine, animal food, and other heating substances.

INOCULATION.

To preserve mankind from the violence of this epidemic scourge; or, at least, to mitigate its effects, various methods have been devised and practised. Among these, we

shall take notice first of the *inoculation of the small-pox*, by introducing the minutest portion of matter into the system, through a slight wound in the upper-arm, made by a lancet or cautery. This bold and ingenious attempt has, doubtless, been the means of preserving innumerable lives, and may therefore be deemed a real benefit to society. With respect to the most proper season for such operation, Baron DIMSDALE has evidently proved, that the inoculation may be undertaken at any period of the year, provided the patient be screened from heat in the summer, and from severe cold in the winter, so that he may enjoy fresh, cool air, when no other epidemic diseases prevail: the most proper subjects are children *after* the second year (on account of the various affections to which *infants* are liable prior to that period), without even rejecting scrophulous, scorbutic, and other habits.

Previously to the inoculation, the patient should, for about nine or ten days, adhere to a regular diet, avoiding all animal food, fat substances, malt-liquors (excepting a little small beer), seasoned dishes, wine, &c. while he subsists on puddings, sago, fruit-pies, and vegetables of every description, but with great moderation. Baron D. farther directs the following powder to be given three times during this regimen, or every third night; and a dose of Glauber's salt to be administered every succeeding morning: Take calomel, and pulverized crabs-claws, of each eight grains, and two grains of sulphurated antimony, or 1-9th part of a grain of tartarized antimony:—the quantity here prescribed, is for an *adult*, so that the 3d, 4th, or even

6th part, will be sufficient for a child, according to its age and sex. —The day after the third dose has been swallowed, will be the proper period for inoculation. But, if the patient be of a delicate, tender habit, especially females; or, if the blood be contaminated by disease, or intemperance, a moderate portion of animal food, and one or two glasses of a generous wine every day, may be safely and advantageously allowed.

Towards the 5th or 6th day, a slight fever occurs, but which again subsides on the appearance of the pustules; these, in the progress of several days longer, become more visible, particularly about the part inoculated; pursuing, in general, the same course as the mild or *distinct* small-pox; and consequently requiring the same treatment, in its different stages.

VACCINE INOCULATION.

One of the most remarkable and important phenomena, in the history of animal nature, is the *cow-pox*, which was first duly inquired into, and publicly announced in the year 1798, by Dr. JENNER, of Berkeley, Gloucestershire; though it had for ages been known to dairy-men in the West of England. This malady appears on the nipples of cows, in the form of irregular pustules.—From the observations made by Dr. JENNER, and subsequently, by Drs. WOODVILLE, PEARSON, and other medical practitioners, it follows, that persons inoculated with matter, taken from one of these pustules, are thereby rendered unsusceptible of *small-pox infection*, and the reverse. The experiments instituted with a view to ascertain this extraordinary fact, are too numerous

merous to be related in this place : let it therefore suffice to mention, that they have been repeated in different countries of Europe, and with nearly the same success.—Although many formidable objections have been started, both by physicians and others, against the introduction of a *new contagious virus derived from brutes*, into the human body ; yet we have the satisfaction to say, that the arguments advanced in favour of the *new inoculation*, are, in our opinion, conclusive. Indeed, a series of facts duly authenticated, in many thousand instances, where the latter has proved a milder disease than the inoculated small-pox, cannot fail to convince the most determined sceptic ; though a few rare cases should have occurred, in which, from accidental or unforeseen circumstances, the contrary effect has resulted. On the other hand, we are firmly persuaded, that those sanguine and noisy advocates for the cow-pox, who, from selfish or interested motives, have thus evinced their eagerness of becoming conspicuous in its defence, by writing and publishing diffuse volumes of undigested matter, have only contributed to their own *notoriety*, instead of more effectually aiding a *good cause*.—Hence, the Editor of this Encyclopedia is induced to repeat the remark he ventured to insert in the 2d and 3d editions of his *Lectures on Diet, &c.* that “ it is of little consequence, whether the cow-pox originate from any cutaneous disease of the milker, or from the grease of horses.”—In order to satisfy professional writers on this subject, in general, and one of the most voluminous late cow-pox historians in particular (who has

suffered himself to be misled in an unguarded hour, to substitute confusion of terms and ideas for *logical deduction*, and sarcasm for argument), we shall briefly observe, that there can be no doubt respecting the milder nature, and comparatively smaller degree of danger attending the *new inoculation*, provided it be conducted by *able hands*. Admitting, farther, that a close and perfect analogy subsists between the two diseases, (which remains to be proved) we trust, no medical philosopher would venture to pronounce *every person* thus inoculated, completely secure from the attacks of a *future epidemic small-pox*, if the latter should appear, perhaps in another climate, or in that virulent form, in which it has sometimes occurred in Britain.

With the philanthropic view of extending the beneficial effects resulting from the new inoculation to the poor, a new Dispensary, termed the *Vaccine Institution*, has lately been established in this metropolis ; where the operation is gratuitously performed, on applying to Mr. Lewis, apothecary, Golden-square ; and where they receive every attention that circumstances may require ; or, in cases of necessity, the patients are visited by medical gentlemen, who have benevolently offered their services for that purpose.—Lastly, we understand, that professional or other persons inclined to promote the inoculation for the cow-pox, may from the same quarter be provided with genuine vaccine matter, preserved on threads, and confined in phials hermetically sealed ; at the reasonable price of half-a-guinca each.

SMALT, a species of glass of a
G 3 dark.

dark-blue colour; and which, on levigating it, assumes a beautiful shade; resisting the action of air and fire: hence, if it could be rendered sufficiently *fine*, it would prove an excellent substitute for *ultramarine*.

Smalt is prepared, by melting one part of calcined cobalt, with two of pulverized flint, and one of pot-ash. At the bottom of the crucibles, which are employed in manufacturing this compound, there is generally found a regulus of a whitish colour, inclining to red, and rather brittle; this, on being again melted, and becoming cold, separates into two parts; namely, that which settles at the bottom, is the true cobalt, and is used to increase the quantity of smalt; the other is called *bismuth*; to which we refer.

Smalt is employed in various branches of the arts and manufactures; as likewise by clear-starchers, in getting up fine linen; and by whom it is termed *powder-blue*.

SMELLING, one of the external senses, is that faculty by which we are enabled to distinguish the odour of different substances. It is exercised by means of papillæ, or little warts of the olfactory nerves, which are distributed throughout the nasal membrane; and convey volatile exhalations to the *sensorium*, exciting impressions of sweet, sour, fetid, or aromatic substances, according to their respective nature.

This sense is intimately connected with that of *taste*; and, in some respects, is more valuable than the latter; as animal beings are thereby enabled to discover unwholesome substances, without exposing themselves to danger. Thus brutes, and particularly dogs, possess a more acute smell than the

human race; for this is their only guide in searching for food; while man, being endowed with superior faculties, can dispense with such sagacity. Nevertheless, remarkable instances of acuteness of smell, in the rational creation, have sometimes occurred.—See the article *ODOUR*.

SMELT, or *Salmo eperlanus*; L. a fish of a beautiful form and colour; its head is transparent, and the skin, in general, so thin that, with a good microscope, the circulation of the blood may be distinctly perceived.

Smelts inhabit the seas, and never swim at a great distance from the shore, excepting when they ascend the current of rivers. In the months of November, December, and January, incalculable numbers are caught in the Thames and Dee; in March and April they cast their spawn, after which they uniformly retire to the sea; though the young smelts remain in their native streams, till they are several inches long. This fish varies in size, sometimes measuring 12 inches and upwards in length; and weighing half a pound: it has a peculiar flavour, which slightly resembles that of the violet.

Smelts are in season towards the latter end of summer, or in the beginning of autumn;—they are sold in the streets of London, split and dried, under the name of *dried sparlings*:—epicures eat them as a relish to a glass of wine, in the morning.—When cooked in a fresh state, they are very nutritious, and easy of digestion.

SMOKE, a dense, elastic fume, which is exhaled from burning coals, wood, and other substances.

Smoke being not only disagreeable to the senses, but also frequently detrimental to health; ingenious

genious men have contrived various means, by which the benefit of fire might be enjoyed, without the inconvenience resulting from such fumigation.—Having already stated some of these expedients, under the article CHIMNEY (vol. i. pp. 517-18), we shall here add a few other methods, by way of supplement.

1. If the funnel be too short (which is necessarily the case in low buildings, as it would otherwise endanger the roof), it will be advisable to contract the opening of the chimney, so as to compel the incumbent air to pass through, or at least very near to the fire. Thus, the funnel will become warmed; and the confined air, being rarefied by heat, will rise upwards, and maintain a proper draught at the office.

2. Another cause of chimnies smoking, arises from the injudicious position of a door. Hence, if the door and chimney happen to be on the same side of the room, and the former should open *against* the wall, the air will necessarily pass into the chimney, and expel the smoke into the room. This inconvenience will be felt particularly on shutting the door; the current being then considerably increased, to the great annoyance of those who may be near the fire. Such nuisance may be easily prevented, by placing a skreen from the wall round the fire-place, so as to intercept the air. A more simple method, however, is that of changing the hinges of the door, so that it may open the contrary way; and thus occasion a current of air to circulate along the opposite wall.

Lastly, the chimnies of new houses, for want of sufficient ven-

tilation, frequently smoke to such a degree, as to render them almost uninhabitable. To remedy this unpleasant molestation, it has been proposed to draw down the upper sash of a window, for the space of an inch. As the frames, however, are generally fixed, especially in old houses, an expedient has been adopted, of cutting a circular hole in a pane of glass, and substituting a round plate of tin, suspended on an axis, and divided into vanes; which, being severally bent in an oblique direction, are moved by the current of air; and the ventilator is forced round, in a manner similar to the sails of a windmill. This contrivance generally answers the end proposed; but, as the continual noise is very troublesome, the following method has been preferably devised. It simply consists in taking out a pane of glass, and suspending it on hinges, so as to be opened and shut at pleasure; or, the pane may be set in a tin frame, and supported by two movable joints on each side, serving the purpose of letting it down, or drawing up and shutting it, according to circumstances, having proper hinges at the lower part: thus, by opening such pane to a greater or less distance, the necessary supply of fresh air may be admitted, without exposing persons in the room, to the draught.—See also FIRE-PLACE.

SMOKING, a practice of consuming tobacco, by which the cut leaves of this drug, being previously put into a pipe, are kindled; and the fume or smoke, after being inhaled, is discharged through the mouth.

Smoking has been strongly recommended by Dr. SHORT; on account of its beneficial effects to persons

persons of gross, phlegmatic, and corpulent habits; as the fumes of tobacco are supposed to accelerate the slow circulation of their blood. It is, likewise, said to be occasionally useful to such as are liable to CATARRHS, especially during chilly, and damp weather, provided it does not exceed the limits of moderation; but persons of this description ought always to employ a long, and thoroughly clean pipe, frequently taking a little beer, tea, or similar diluent liquors: they should, however, not resort to such practice, a short time before or after meals; because it then materially contributes to retard digestion.

No young people, especially those of lean habits, should indulge in smoking; for, though in certain cases, it may be productive of advantage, it is to them extremely detrimental; exciting giddiness, nausea, violent purging, &c. in consequence of which, many persons have contracted the disgusting practice of parting with their saliva every minute; and have thus eventually smoked themselves into a consumption.

Farther, habitual smoking during the summer, is more prejudicial to health, than in the winter; from the increased evacuation of saliva, which it necessarily occasions; and from its being also apt to render the body feverish. . . . Another inconvenience attending this practice is, that it renders the teeth of a yellow, or black, hue; and, while foul pipes are employed, it is apt to corrode these useful bones, so as to taint the breath, and even to induce putrid ulcers in the gums. Hence, we seriously advise all persons carefully to refrain from this absurd custom, unless it be indi-

cated as a *medicine*, in the cases above mentioned; for it not only vitiates their fluids, but weakens the digestion, and eventually impairs, or at least stupefies, the energy of the mind.

SMOKING, in domestic economy, is a mode of preserving meat, such as hams, bacon, geese, &c. by previously salting, and then exposing them to the smoke arising from a wood-fire. For this purpose, the chimney is usually furnished with recesses or *lofts*; which, communicating with the funnel itself, in a lateral direction, do not admit a large volume of smoke to pervade the articles there suspended; but, as the latter gradually receive the ascending fumes, they become impregnated with them in a more uniform, and effectual, manner.—In this country, where coal is the general fuel, it becomes more difficult to smoke hams, and other meat: hence, epicures have contrived a method of effecting that object, by means of small chimnies purposely built, with a hearth below, where they kindle a wood-fire, especially from the branches of the JUNIPER-TREE, the fumes of which impart to the flesh of animals a very agreeable, pungent flavour.

With respect to the salubrity of smoked provisions, and particularly ham, we have already expressed our opinion (vol. ii. p. 427): it therefore remains to add, that such food ought never to be allowed to young people, before they have completed their growth, nor to adults in a feverish, or debilitated state. Even the robust should eat it only as a relish, and with great moderation.

Smoking of Lamps, is a circumstance frequently disregarded in domestic

domestic life: as, however, the fumes ascending from the oil, especially if it be tainted or *rancid*, are highly pernicious, when inhaled into the lungs of asthmatic or other persons liable to complaints of the chest, we shall communicate the following simple expedient: Let a sponge, three or four inches in diameter, be moistened with pure water, and in that state be suspended by a string or wire exactly over the flame of the lamp, at the distance of a few inches; this substance will absorb all the smoke emitted during the evening, or night; when it should be rinsed in warm water, and thus again rendered fit for use.

SMUT, a disease affecting almost every species of corn, the grains of which become filled with a fetid black powder, instead of containing farinaceous matter.

Having already stated (vol. i. pp. 170-71, and vol. ii. pp. 65-66), the result of several experiments, made with a view to prevent this pernicious distemper, we shall now communicate such methods, as are maintained to have proved efficacious; thus rendering our accounts as perfect as the nature of this work will admit.

In the 6th vol. of *Annals of Agriculture*, Mr. ANDREWS recommends the following steep, as being preferable to any other; having successfully employed it for several years:—Let half a hogshead of strong ley be made, by passing water repeatedly through *wood-ashes*; and be put into a copper with half a pound of *arsenic*. This mixture is next to boil for about five minutes, when the poisonous properties of the arsenic will be so diminished, that birds or fowls may pick up the uncovered grain, after it has been sown, without receiv-

ing any injury. The ley should now be poured into a deep vessel, and be suffered to stand till it become cold; when a strong wicker-basket, sufficiently capacious to hold two bushels, is to be set in the liquor, with half a bushel of wheat; which ought to be repeatedly stirred; the light grains, and dusty particles that may rise to the surface, being carefully removed. The grain is next to be drained, and laid on a brick or clay floor: a sufficient portion of lime should be strewed upon it, in order to prepare it for sowing.—This quantity of ley, Mr. ANDREWS observes, is sufficient for steeping 50 bushels of wheat; and he farther remarks, that only a quarter of a peck of lime will be required for drying four bushels, provided it be mixed the night before it is used.

The *vitriolic acid*, or oil of vitriol, has lately been employed with success, by an enlightened agriculturist, J. S. JENNINGS, Esq. as a preventive of smut. The proportions employed for this purpose, were, one gallon of the acid to thirty of water; which form a proper mixture for immersing wheat. His experiments are of the greatest importance; and we trust that future trials will fully ascertain the efficacy of this process.

SNAIL, or *Helix*, L. a genus of testaceous insects, comprising sixty species, of which the following are the most remarkable, viz.

1. The *hortensis*, or Common Garden Snail, abounds in this Country. It is covered with a brown shell, and furnished with two horns, containing its organs of sight, which it protrudes, and draws in, at pleasure. This insect is remarkable for the viscous traces which it leaves behind in its course.

2. The

2. The *pomatia*, or Red Garden Snail, is found in the warmer parts of Europe, whence it has been introduced into Britain; but, at present, it inhabits principally the southern counties. It differs from the Common Snail in its very deep, brown colour, which approaches to red.—This species has, lately, been employed in the bleeding piles with uncommon success; fresh insects being laid, in a raw state, on the diseased part, every second or third hour.

Snails are very mischievous in gardens, particularly to wall-fruit; and, though they are preyed upon by numerous insects, such as worms, &c. which breed both in their intestines and on their backs; yet they are in some places so numerous, as to require effectual measures for their extirpation. Hence, it has been recommended to strew the ground with lime and ashes; but the most certain method of destroying them, consists in closing every crevice in walls, as soon as these vermin appear in damp or cloudy weather; and afterwards collecting them by the hand. Thus, in the course of two, or, at the farthest, three years, they will be completely exterminated.

Snails, however, may be made subservient to economical, and medicinal purposes. It is well known that the *red snail* forms a considerable article of food in Spain, Portugal, and other Catholic countries, during Lent. These insects, indeed, are very nourishing; and, in their gelatinous qualities, bear great resemblance to oysters: they have, therefore, been deservedly recommended in hectic and consumptive cases. (See vol. ii. p. 50.) But, in order to ensure their bene-

ficial effects, the dose prescribed in the page above cited, should be continued for one or two months, or even for a longer period, according to circumstances.

SNAKE, the COMMON, or *Coluber natrix*, L. a native reptile, which is often found in bushy places, and in banks, near waters. It is from two to three, and in the south of Europe, often ten feet in length: the back is of a dusky colour, and the belly is beautifully variegated with black and bluish stripes. It has two rows of small serrated teeth, and is perfectly harmless; being destitute of the canine teeth, with which vipers and other venomous serpents are furnished. It produces numerous eggs, generally dropping them on dung-hills, where they are hatched by the warmth of the sun.

The common snake feeds on small insects, frogs, and vegetable substances; thus being of essential service to mankind; as it devours considerable numbers of field and harvest-mice.

SNAKE-WEED, or *Polygonum*, L. a genus of plants comprehending thirty-three species, ten of which are natives of Britain: the following are the principal, namely:

1. The *Hydropter*. See **WATER-PEPPER**.

2. The *Persicaria*, or **SPOTTED SNAKE-WEED**, abounds in ditches, and watery situations; though it is sometimes found in corn-fields, where it flowers from the month of July to September. This species is slightly acid and astringent: it is eaten by goats, sheep, and horses, but refused by hogs and cows.—LINNÆUS informs us, that woollen cloth, previously dipped in a solution of alum, acquires a yellow colour.

colour from a decoction of this plant.—DAMBOURNAY obtained an olive colour.

3. The *Bistorta*. See BISTORT the Great.

4. The *viviparum*. See BISTORT the Small.

5. The *Fagopyrum*. See BUCK-WHEAT.

6. The *Convolvulus*. See BUCK-WHEAT the Climbing.

7. The *aviculare*, or KNOT-GRASS SNAKE-WEED, is found on road-sides, in paths, streets, and corn-fields, particularly in a gravelly soil: it flowers from April to October.—This species of grass is eaten by cows, horses, sheep, goats and hogs: its seeds are a grateful food to small birds of every description; and may likewise be employed for the same purposes as those of BUCK-WHEAT (see vol. i. p. 376): but sheep, feeding on the knot-grass snake-weed, become, according to BECHSTEIN, liable to obstructions, and consequently to putrid diseases.

SNAP-DRAGON, or *Antirrhinum*, L. a genus of plants consisting of fifty-three species, eleven of which are indigenous: the following are the principal:

1. The *Elatine*, or Sharp-pointed Toad-flax. See FLUELLIN.

2. The *Linaria*. See TOAD-FLAX.

3. The *majus*, or GREATER SNAP-DRAGON, grows on old walls, especially on the chalk-cliffs near Dover and Gravesend, where it flowers in the months of June and July.—This herb was formerly in great repute among the superstitious; but, at present, an excellent lamp-oil is expressed from its seeds in Germany.

4. The *Orontium*, CALF'S-SNOUT, or LESSER SNAP-DRAGON, thrives in corn and turnip-fields, and bears

purplish flowers covered with a yellow down, in the months of July and August.—This narcotic, poisonous plant, ought to be carefully extirpated.

SNEEZE-WORT-YARROW, BASTARD PELLITORY or GOOSE-TONGUE, *Achillea Ptarmica*, L. a native perennial plant, growing in moist meadows and shady places; flowering in July and August.—It is eaten by horses, cows, goats, hogs, and sheep:—the roots have a hot pungent taste; the leaves, when dried and pulverized, excite sneezing; and its young tops afford a sharp, though pleasant, ingredient in spring salads.

SNEEZING, a convulsive motion of the muscles of the breast, which is caused by the irritation of the membrane lining the nose; by acrid, pungent matters floating in the air; or by certain drugs denominated *sternutatories* or *errhines*; and in consequence of which, the air is expelled through the nostrils, with a certain loud, hissing report.

This muscular agitation arises, either from external or internal stimulants: in the former case, it is occasioned by the odour of snuff, sweet-marjorum, thyme, &c. inhaled through the nostrils: in the latter, it is induced by the acrimony of the lymph, which moistens the nasal membrane. The matter expelled by sneezing, is derived primarily from the nose and throat; a mucus being continually exuded into those parts from the pituitary integument; and secondarily from the breast and lungs.

Sneezing may be advantageously excited by the use of sternutatories, in certain affections of the head, eyes, &c. or, when foreign bodies have accidentally been introduced into the nostrils of children: such remedies,

remedies, however, ought to be resorted to with caution; as too frequent a repetition of that convulsive effort, will eventually weaken the sense of smelling, or induce bleedings from the nose.

SNIPES, the COMMON, or *Scolopax gallinago*, L. a bird of passage, of which there are more than forty varieties, mostly breeding in Europe, and subsisting on insects. Some of these wild-fowl frequent moors, others delight in swampy bushes, and still others in the open fields. The two first classes are common in Britain, especially during the summer, and sometimes throughout the year. They seldom exceed four ounces in weight, and are, together with their long bill, from 10 to 12 inches in length: the breast and belly are white; the back is covered with long feathers, beautifully variegated with black and reddish-brown spots.

Snipes are most frequent on lofty mountains, and in moors, bogs, or marshy situations; where they construct their nests of dried grass, and lay four dusky olive-coloured eggs. They may be easily taken, by placing in their haunts, twigs of birch covered with bird-lime, in various directions: when one of the birds is caught, the sportsman should not be too hasty in removing it; because the creature will feed with the twig beneath its wing, and thus decoy numerous other snipes.

But the most usual methods of obtaining these birds, are by means of nets, and by the gun, in the months of November or December, being then very fat: and, as they always move against the wind, the fowler ought to place himself in the same direction; because they will then fly towards him, and consequently present a fair

mark, at which he may aim with some prospect of success.

Snipes possess a most delicate flavour; on account of which they are highly esteemed at the tables of the opulent; who prefer them to partridges: but, as the former bird is eaten together with its intestines, which contain many stimulant insects, &c. it has been justly supposed, that the frequent indulgence in such food, is apt to induce the *gout*, or at least to accelerate its paroxysms.

SNOW, a meteor, which is formed by the congelation, or freezing, of vapours in the atmosphere.

Snow differs in no other respect from rain, but that it is frozen in its descent to the earth, and falls in collective masses of transparent whiteness: these are known under the name of *flakes*.—It has been erroneously believed, that snow possesses more fertilizing properties than rain; but the real difference has, by MARGGRAF, been ascertained to be exceedingly small. It serves to defend corn, and all other vegetables, from the severity of winter-frosts; as it prevents the internal heat of the earth from being evolved through the surface of the land, and consequently ameliorates the soil. The plants, being thus sheltered, shoot forth in the spring with renewed vigour; and, being cherished by the genial rays of the sun, vegetate with increased luxuriance.

SNOW-DROP, the COMMON, or FAIR-MAIDS-OF-FEBRUARY, *Galanthus nivalis*, L. a native perennial plant, growing in orchards, meadows, and the sides of hedges; flowering in February and March.

The snow-drop presents a beautiful little flower, and is chiefly esteemed

teemed on account of its early appearance; adorning the garden, when the soil is covered with snow: it is divided into three varieties, known under the names of *single*, *semi-double*, and *double*, which differ only in the seasons of their flowering. They may be easily propagated in any soil, and will multiply exceedingly by offsets from the roots.

The roots of the snow-drop may be made subservient to an useful domestic purpose: Dr. DARWIN thinks that, if they were dug up in the winter, and prepared in a similar manner, they might afford a nutritious powder, resembling that of SALEP. He observes, that he once boiled a few; which on tasting them, possessed no unpleasant flavour. He is therefore of opinion, that, if prolific seeds could be procured from this plant, it might be advantageously cultivated for the same purposes as the ORCHIS; a conjecture which is corroborated by the experiments of GLEDITSCH, who obtained from the roots of the snow-drop, an excellent *starch*.

SNUFF, a well-known preparation, the basis of which is *tobacco*, reduced to powder; other matters being incorporated, with a view to impart a degree of pungency and peculiar odour.

It would be an endless task, to enumerate the various compounds that have been introduced to the notice and patronage of the public, in different countries: hence we shall only remark, that there are three principal kinds of snuff, which are known under the names of *granulated*; *impalpable*; and the *bran*, or the coarse part remaining after the second sort has been sifted.

The practice of taking snuff, though less detrimental to health, is not less whimsical than that of SMOKING; for, if continued to excess, it occasions such a copious discharge of mucus from the nostrils, as will eventually impair the sense of smell, sometimes even corrode the membrane lining the nose, and occasion deep ulcerations in that organ. An instance occurs in the *Transactions of the Learned (Acta Eruditorum)*, for the year 1715, of a person who, by his extravagant use of snuff, at length was troubled with a polypus in the œsophagus, which rendered him unable to take any nourishment, and literally *starved* him.—Another consequence of indulging in this singular custom is, that it frequently affects the *voice*; for, as a kind of stricture is thus induced at the base of the nose, which communicates its influence to the palate and organs of speech, the votary of such custom is consequently stimulated to take additional quantities, in order to remove the obstruction.

The occasional and moderate use of snuff, however, is in some cases beneficial. Thus, if a person be subject to head-ach, or to diseases of the eyes, or ears, a few grains of such powder will often afford speedy relief, in consequence of instantaneous sneezing. On the other hand, we would advise those who know the satisfaction of cleanliness, to avoid as long as possible, the taking of snuff; and such as are liable to phthisical complaints, hemorrhages, or internal ulcers, should be particularly cautious; as the indulgence of this practice might, to them, be productive of fatal consequences.

SOAL, or SOLZ, *Pleuronectes solea*,

solea, L. a fish that abounds on the British coasts, and is of various sizes; those taken on the western shores weighing from six to seven pounds each; while such as are caught on the eastern coast, seldom exceed one, or at the utmost, two pounds in weight. The upper part of its body is of a deep-brown colour, and the belly is perfectly white.

These fish are taken by means of *trawl-nets*, at every season of the year; but, by the 1 and 2 Geo. I. c. 18, they are prohibited to be caught, if less than seven inches in length, from the eye to the tip of the tail.

Soles are highly esteemed on account of their delicate flavour; the facility with which they are digested; and the rich nutriment they afford: these good qualities, however, are supposed to decrease in proportion to their larger size. Hence, the most diminutive are justly preferred; but they ought to be dressed as soon as possible, because their delicacy is impaired by keeping.

SOAP, a composition of fixed alkaline salt; in a state of combination with animal or vegetable oil: it is sometimes dry and hard, at others soft and liquid; being manufactured in various ways, with and without heat; but, as these depend on the same principle, we shall state only the common methods.

Where large quantities of soap are to be formed, heat becomes indispensable. For this purpose, a ley is made of soda and quick-lime, in the proportion of four parts of the former to one of the latter; and which is sufficiently strong to bear an egg. Equal parts of such ley, and of some tallow, or oil, are next pour-

ed into a copper, placed over a gentle fire, and stirred continually, till they begin to unite; when the rest of the ley is added, and the agitation continued, till the ingredients be completely incorporated. The mixture is next cast into proper vessels, at the bottom of which a little pulverized chalk is spread, to prevent it from adhering: and, in a few days, the soap acquires a sufficient degree of consistence, to be taken out, and formed into oblong squares.

Such is the process by which the various kinds of soap are manufactured; the only difference being in the oils employed in the composition. Thus, the common hard soap is prepared from the caustic ley above-mentioned, with the addition of tallow. The *Vermice*, *Alicant*, or *Spanish Soap*, with olive-oil; *Green Soap* with that of rape, hemp, or linseed; *Black Soap* with train-oil; and, lastly, the ordinary *Soft Soap* is formed by using pot-ash as a substitute for soda, together with tallow, of train-oil; to which is added a large quantity of common salt.—The perfumed compounds, known under the names of Palm, Violet, Almond, or other Soaps, are prepared in a similar manner; the oils of such vegetable substances being employed, instead of those of the usual kind.

The vegetable oils, as well as the fat of animals, generally consumed in the manufacture of soap, raising this article to a high price, experiments have successfully been made, with a view to substitute *fish-oil*. The only objection to its general use, is a disagreeable smell, of which it cannot be easily divested.—With a similar design, **CHAPTAL** has proposed to employ
wool.

redol. He directs (*Annals de Chimie*, vol. 21) the ley to be prepared in the usual manner, and made boiling hot; when shreds of rags of any kind of woollen cloth are to be gradually thrown in, and they will be speedily dissolved.— Fresh portions are then to be sparingly added; the mixture must be constantly agitated: when no more of the woolly substance can be dissolved, the soap will be ready; and, when cool, is fit for use.— This compound has been tried in washing, and found to answer the same purposes as common soap: we therefore conceive, it might be advantageously substituted for that expensive article, in numerous families; provided the rags could be obtained in sufficient quantities, and at a reasonable price.

As various frauds are practised by the manufacturers, and especially by the retailers of soap, by adding ingredients that increase its weight, but diminish its value, we deem it our duty, to give a few hints for detecting such impositions. The liquor, generally employed for such nefarious purpose, is a strong brine made of common salt and water, which may be added to soap formed of tallow (the ingredient principally used in the manufactories of Britain), without rendering it softer, or less consistent. In order to prove this adulteration, it will be sufficient to expose a piece of the suspected soap to the air, for several days, when the water will evaporate, and the quantity thus fraudulently added, may be accurately ascertained, by the diminished weight of the soap. Several other methods have been contrived for detecting this article, but these being neither so lucrative as that before stated, nor

generally known, we are not disposed to propagate such knowledge. Hence, we shall proceed to review the principal patents that have been granted to speculators in this article; and next explain the uses to which soap may be applied.

In November, 1790, Mr. SEYMOUR PUGH obtained a patent, for a method of preparing oils for manufacturing hard soap, either with, or without, the aid of any tallow, or other grease, at a cheaper than the usual rate. His process, however, is too complex to be understood, excepting by manufacturers: the inquisitive reader will, therefore, consult the 2d vol. of the *Repository of Arts*, &c. where a diffuse specification is inserted.

In July, 1800, a patent was granted to Mr. JOHN CROOK, for a method of making soap, by means of the volatile, mineral, and vegetable alkalis, &c. His invention consists in extracting the volatile alkali from urine, either by distillation, or in its raw state; and rendering it caustic by means of unslacked lime, in the proportion of one pint to eight of raw urine. These are poured into a cask for 6 or 8 hours, when the clear liquor is drawn off, and incorporated with the common materials for making soap. The patentee likewise employs such alkaline ley, and also the raw urine, for the purpose of strengthening the ordinary soap, so as to impart to it greater clearness and solidity. He farther observes, that such urinous lixivium may be profitably applied to the cleansing of raw goods from the unctuous matter with which they are impregnated; by boiling the liquor, and causing the steam that arises from the volatile alkali in a state of vapour,

vapour, to pass into close vessels, in which such goods are suspended.

Soap is one of the most valuable articles in domestic economy : its uses in various manufactures require no description. The ashes, refuse, or waste, remaining after this compound is made, furnish an excellent *manure*. (See vol. i. p. 27.) The suds, or water, in which soap has been dissolved, are of great service to gardeners ; as they effectually destroy INSECTS in hot-houses. (See also vol. ii. p. 496, and vol. iii. p. 232.) Farther, it appears from a patent granted, in June, 1780, to Mr. SAMUEL UNWIN, and which is now expired ; that *soap-suds*, after being used in scowering, washing, &c. may be rendered sufficiently strong to serve the same purposes, repeatedly, and even for the *re-production* of soap. He directs any quantity of the suds (when rendered useless by the foul or greasy matters they may hold in solution) to be boiled over a brisk fire ; in consequence of which, a scum of grease, oil, &c. will rise to the surface. This must be saturated or dissolved, by the gradual addition of pot-ash, or similar alkaline salt ; the whole being stirred, till the scum disappear. The soap-suds, thus corrected, are now to boil for two hours, when the fire must be discontinued, in order that all feculent or earthy particles may subside. The liquor will then be found sufficiently purified, and may again be employed for scowering, &c. every time repeating the process before described. In order to make soap of such *rectified* suds, the patentee directs any quantity to be drawn off into shallow vessels, in which it must be evaporated over the fire, till it acquire a due consistence ; and, by

adding the usual proportion of sea-salt, the mixture will become hard, and possess all the properties of saponaceous matter.

Soap is also of considerable utility in medicine : for this purpose, however, it is prepared without the aid of heat ; the ley being filtered and concentrated by evaporation, to such a degree, that a phial capable of holding an ounce of water, will contain one ounce and 216 grains, or nearly $1\frac{1}{2}$ oz. of such lixivium. One part of the latter is then mixed with two parts of the oil of sweet-almonds, or of olives, in a stone vessel ; the ingredients are occasionally stirred ; and, in the course of a week, a firm white soap will be obtained.—This compound is reputed for its efficacy in dispelling *calculi*, or stones, in the human body ; and, when dissolved in ale, it has with advantage been administered in the jaundice. BOERHAAVE always prescribed it with resinous pills ; as it contributes to decompose them in the stomach. But, of late years, soap has fallen into disrepute, and is now seldom employed in medicine, though we are informed by M. BELLOT, that soap-water has been given, with the happiest effects, to persons bitten by mad animals.

There are numerous vegetables, that may afford proper *substitutes for soap*, in its various applications to domestic uses ; but, as many of these have already been pointed out ; and others will occur in the subsequent pages ; we refer the reader to our *General Index of Reference*.

SOAP-EARTH, or *Steatites*, L. a species of fossil, which abounds in Devonshire, Cornwall, and the islands in the vicinity of the *Lizard Point*. It is generally of a white,

or

or grey colour, intermixed with greenish or yellowish shades; is composed of very fine particles; of a firm, equal, and regular texture; and is very heavy. Its surface is smooth and glossy; it feels soft and greasy; and neither melts in the mouth, nor adheres to the tongue, or stains the fingers.

This mineral may be formed into a paste with water, which is easily worked on the potter's wheel; and if, thus manufactured, it be exposed to an intense heat, it becomes so hard as to emit fire, when stricken against steel.

The soap-earth possesses similar properties with Fuller's-earth, and is employed for the purpose of cleansing woollen cloths from grease: it does not, however, work so easily as clays; and, when digested with vitriolic acid, it forms a salt somewhat resembling that obtained by evaporating Epsom-water.

SOAP-WORT, the **COMMON**, or **BRUISEWORT**, *Saponaria officinalis*, L. a native perennial, growing in meadows and hedges; flowering in July and August.—The leaves possess a disagreeable bitter taste: if bruised and agitated with water, they produce a saponaceous froth, which may serve for removing greasy spots from linen, as well as woollen cloths; but it discharges no colours.—The roots are somewhat pungent, have a sweetish taste, and in smell resemble those of liquorice: a strong tincture may be prepared, by digesting them in rectified spirits.—In medicine, this plant is now exploded; but, in domestic economy, the sap expressed from the root, stalk, and leaves, may be employed as a substitute for soap, in cleansing raw or coarse cloth, and likewise for fine linen,

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in the washing of which, it will save at least one-half of that expensive article, otherwise required.—Lastly, the admirers of winged insects may catch the most beautiful butterflies on the flowers of the common soap-wort, which are visited by them during twilight.

SODA, **FOSSIL**, or **MINERAL ALKALI**, a peculiar salt, which is found native in various parts of the world; but, as the quantity thus obtained, is inadequate to its extensive consumption, various methods have been devised, for procuring it from sea-salt; and also by the burning of the salt-wort, together with other saline plants, which grow in the vicinity of the sea-coast.—See **BARILLA**, and **FOSSIL ALKALI**.

Few articles are of greater importance to the arts, manufactures, and domestic economy, than soda. It is indispensably necessary for making *hard* soap; and also forms an excellent substitute for this article; as four ounces of the former, and six of the latter, are fully equal to 16 ounces, or one pound of soap, for cleansing 14lbs. of cloth, by hand; while it softens the hardest water: thus, a saving will arise in the expence of from one-third to one-half, accordingly as that operation is performed by the hand, or by machines.—The superior effects of soda are fully evinced in the cleansing of fleecy hosiery, flannels, or worsted stockings; which, when managed with warm water, soap, and pot-ash, acquire an unpleasant odour, and are apt to shrink, in consequence of the rubbing, particularly if they be immersed in cold water: whereas, by using the fossil alkali, these inconveniencies are said to be completely avoided, and neither the

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quality of the goods will be impaired; nor the hands of women, when the soda is judiciously employed, be injured in the same manner, as generally happens by the common ley.

Farther, as frequent bathing or washing of the body greatly conduces to health, it has been recommended to dissolve a small portion of soda in the water thus employed; or, at least to pass a towel wetted with a solution of soda and soap, over the surface; for such practice opens the pores, and removes the disagreeable odour arising from profuse perspiration:—a similar application will be productive of equal advantage to horses that are employed for racing, post-chaises, or other purposes, where great exertions are required.

If a weak solution of soda be poured into foul bottles or casks, in which wine has been kept for a considerable time, it will completely dissolve the tartarous crust that is formed on their inner surface:—boot-tops, saddles, or bridles, may with such liquid be effectually cleansed, while the original colour of the leather is preserved.

This alkali may, likewise, be employed for sweetening kitchen-utensils, and particularly for removing grease or acids from copper vessels; because these concretions, when suffered to remain, form a strong poison, and may be productive of deleterious effects. In a similar manner, it may be used for tin and iron vessels, to prevent them from becoming rusty. Lastly, as the utensils of the dairy are apt to acquire an acid, disagreeable smell, during the summer, and particularly after a thunder-storm, though every attention be bestowed

on them, such fetor may be completely removed by a small portion of soda, which will render the milk-vessels perfectly sweet; while it neutralizes and dispels the acid ferment imbibed by the wood, and which might otherwise taint the milk.

The crystals of soda are not less useful in a medicinal point of view. Thus, a solution of this salt, is an excellent *gargle* for cleansing the throat, mouth, and gums, both in a sound and in a diseased or ulcerated state; while it whitens the teeth; and dissolves all incrustations that may be formed on their surface, without injuring their enamel. And, if a small quantity of this liquid be occasionally swallowed, after washing the fauces, it is said effectually to remove a *fetid breath*. Soda is, in many instances, preferable to magnesia, for correcting acidity in the stomach; nay, it is even asserted, that it *prevents* the gout, gravel, stone, and similar disorders: lastly, if the fossil alkali be mixed with cream of tartar, in the proportion of 14 parts of the former to 12 of the latter, it furnishes one of the mildest laxatives; namely, the Rochelle Salt.—See also GLAUBER'S SALT.

SOFT-GRASS, the MEADOW, or *Holcus lanatus*, L. a native perennial, growing in meadows and pastures, particularly in moist; light situations: it flowers in the months of June and July. This grass, though vegetating late in the season, is very productive; but is not much relished by cattle: it makes a soft, spongy hay, that is very hurtful to horses; which, by eating it, become affected with a profuse discharge of urine, and general weakness. In case any hay, obtained from this vegetable, be acci-

accidentally given to those valuable animals, an immediate change of food will prevent its farther ill effects.

As the stalks of the meadow soft-grass attain a height of from two to three feet, and the root is eminently calculated for consolidating loose sandy soils, it merits to be cultivated in such situations.

SOIL, signifies the ground or mould, in which vegetables grow; and which serves as a *reservoir* for receiving and dispensing their nutriment.

Having already, under the articles ARABLE LAND; LAND; MARSH; MOOR; &c. stated the most approved methods of renovating or restoring exhausted soils, and of converting them from a state of nature; we shall now communicate a few hints, by which their *quality* may be ascertained.

To effect this purpose, BERGMAN, FORDYCE, KIRWAN, and other eminent chemists, have analyzed the constituent parts of different soils, namely; carbon, lime, clay and siliceous sand; and, according to the respective portions of these ingredients, they conceive that the relative fertility of soils might be determined. But, as such analysis is very inaccurate and uncertain, Dr. DARWIN proposes to dry a few pounds of different soils, in the same temperature: when their moisture is evaporated, they must be weighed, and exposed to a red heat. As carbon is a principal ingredient in calcareous earths, he conjectures, that the soil which loses the greatest portion of its weight, is the most fertile; because the carbonic matter, being the principal nutriment of plants, will be dissipated in the flame.

Another mode of examining the

fertility of soils is, by calculating their specific gravity, when dried at equal distances from the fire, in bladders furnished with small apertures; and, after immersing them in water, by accurately observing the difference between their respective weights, both in that fluid and in the air. But the most certain criterion, by which to judge of the value of land, is afforded by attending to the growth and colour of the vegetables spontaneously produced; and which in some measure indicate the nature of the soil beneath their roots. Thus, the Fox-glove, and Sandwort, abound in sandy situations; the Brook-lime, and some species of Cresses, in moist ground; the Corn Saw-wort, or Way-thistle, indicates a good, as the Dock shews an inferior, soil. Many plants might be added to this list; but, we shall conclude with remarking, that if an accurate *Geographical Catalogue* of such vegetables, as grow in particular situations, were published in every country, it would be of great service, in ascertaining the degree of fertility, as well as the nature of different soils.

SOILING. See vol. i. p. 463.

SOLOMON'S-SEAL, the SWEET-SMELLING, or *Convallaria Polygonatum*, L. a native perennial, which grows in mountainous woods, and the fissures of rocks, principally in the county of York: it flowers in the months of May and June.—This vegetable is eaten by sheep and goats, but is refused by horses, hogs, and cows.—Its roots consist of a pulpy, tuberos, white, sweet, and mucilaginous substance: in times of scarcity, they have been converted into a wholesome bread; and are always used for that purpose, by the lower classes in Sweden

and Russia: a good *starch* may likewise be extracted from them; and the expressed juice, being somewhat acrid, serves as a cosmetic, or a lotion for pimples, &c.—The young shoots of this, as well as of the following species, may, in the spring, be eaten like asparagus.

SOLOMON'S-SEAL, the **COMMON**, or *Convallaria multiflora*, L. is also perennial; grows in woods and thickets; and flowers in May or June. This plant is eaten by cows, goats, and sheep; it possesses the properties of the preceding, but in an inferior degree; and to which it bears so close a resemblance, that it can be distinguished only by its smaller, white flowers, tipped with green; whereas those of the former are larger, though less in number, and white, with a green line running down each segment.

SOOPV. See **SOY**.

SOOT, a volatile powder, of a deep black colour, and an extremely bitter taste: it arises from burning wood, coal, or other fuel; or, more strictly speaking, from the *smoke* condensed, and deposited at the sides of chimnies.

Considerable quantities of soot are employed in the manufacture of sal ammoniac; and also by dyers, for imparting a *fawn* colour to wool.—(See vol. ii. p. 207). But the principal advantage derived from it, is, when used as a manure for cold, moist, and clayey meadows, and pastures; as it is of a warm ameliorating nature; affords nourishment to grass; destroys noxious insects; protects the crop from chilling rains; and prevents the growth of moss. The quantity varies in different counties, from 15 to 25, and even 40 bushels per acre; but it ought to be strewed on the land during the winter, and

in calm weather, so that the subsequent vernal rains may wash it into the soil: for, if its distribution be delayed till the end of February, or the beginning of March, the great heat then evolved, will affect the tender shoots of the grass, and occasion a temporary check to its vegetation. Some circumspection, however, is required, that the soot be *genuine*; as the chimney-sweepers frequently mix with it finely-sifted coal-ashes; in order to increase the bulk; but this fraud may be easily detected, by the grittiness and uncommon weight of the soot.

SORB. See **SERVICE-TREE**.

SORE-THROAT. See **QUINSY**.

SORREL, the **COMMON**, or **SORREL-DOCK**, *Rumex Acetosus*, L. a native perennial, growing in meadows and pastures, where it flowers in the month of June.—This vegetable is eaten by horses, cows, goats, sheep and swine.—It is cultivated in France and Britain, for culinary purposes; as, in the former country, its leaves are a frequent ingredient in soups, and also eaten in salads; in the latter, they are esteemed for their cooling properties, because they tend to allay thirst; to promote the urinary discharge; and, when boiled in whey, they afford a palatable drink to persons labouring under inflammatory fevers.—In Ireland, the sorrel-leaves are used by the lower classes, both as a kind of sauce to fish, and also with milk: they possess, however, a very austere, acid taste, when raw, insomuch as to divest the teeth of their enamel; hence they should not be eaten by those whose stomach abounds in acidity.

The seeds of this vegetable were formerly used in medicine; but
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are at present, according to HENRICH, employed by the Swedes among their bread-corn, and reduced to flour; nay, the inhabitants of Carrelia convert them into bread, without any addition.—Its roots have an austere, bitterish, taste, and are chiefly valuable to tanners; and also for the red tinge which they yield, after having been dried and boiled. On adding alum to this decoction, painters prepare a fine red colour, but which is useless in dyeing.—BOERHAAVE obtained from the juice of the Sorrel-dock, an *essential salt*, resembling that of lemons.

SORREL, the SHEPHERD'S, or DOCK, *Rumex Acetosella*, L. is also a native perennial, which grows in sandy meadows, pastures, and gravel-walks: it flowers in May and June.—The stalks of this plant, which affords a wholesome food for sheep, seldom exceed 12 inches in height: it deserves, however, to be mentioned, that cows partaking of the Shepherd's Dock, yield a milk tinged with blood.

SORREL, the COMMON WOOD, SOUR TAREWELL, or CUCKOW-BREAD, *Oxalis Acetosella*, L. another native perennial, which abounds in woods, shady hedges, and on heaths: it flowers in the month of April.—This vegetable is eaten by goats, hogs, and sheep; but is not relished by cows, and is refused by horses. Its purple leaves yield, on expression, a gratefully acid juice, which has been beneficially used in scorbutic eruptions: and, if such juice be properly clarified, evaporated, and deposited in a cool place, it will produce a considerable quantity of acid crystals, which may be employed for removing iron-moulds from linen-cloth; and which are sold under the name of *Essential Salt of Lemons*.—An infusion of the leaves makes a palatable diet-drink

in ardent fevers; and, on being boiled in milk, they form an agreeable whey. They have also been successfully applied to scrophulous ulcers, when rolled in a cabbage leaf, and digested in warm ashes, till they were reduced to a pulp.—But the most easy and efficacious way of preserving these leaves, is that of converting them into a kind of conserve, with the addition of double their weight of sugar; in which form, they are an excellent substitute for lemons, and may be given with advantage in all putrid and other fevers, where antiseptics are indicated.

SOUP, a strong decoction of beef, veal, or other animal substances; and which is generally seasoned with aromatic vegetables, pepper, or similar heating spices.

Soups form a principal article at the tables of the luxurious; being generally served as a first course; though sometimes they constitute the whole dinner of those who are less opulent, under the mistaken notion, that such *liquid* is more wholesome, and easy of digestion, than *solid* meat. See vol. i. pp. 364-5. Such dishes ought, however, to be given with great caution to *convalescents*; as the large proportion of spices, wines, and other stimulating articles that enter into the composition of soups, cannot fail to oppress the stomach, to irritate the system, and not unfrequently to occasion a relapse.

Portable-soup is a kind of cake formed of concentrated broth; which, being divested of all fat, while the putrescent parts of the meat have been evaporated by boiling, is reduced to a gelatinous consistence, resembling that of glue. This composition may be preserved, in a dry place, for three

or four years : it is recommended, on account of its nutritive qualities, by Sir JOHN PRINGLE, and may prove of essential service on long sea-voyages ; as it requires to be eaten with a large proportion of vegetables ; and thus, in some measure, prevents the attacks of that scourge of mariners, the *sea-scurvy*.

—When portable soup is to be cooked, it will be advisable to put half or a whole ounce of this substance into a vessel containing a pint of boiling water, which must then be placed over the fire, and continually agitated with a spoon, till it be perfectly dissolved : thus, it will form an excellent and nourishing liquid ; requiring no other seasoning, but a little common salt.

SOUTHERN-WOOD, the Common : See MUGWORT, the Common.

SOUTHERN-WOOD, the Sea : See WORMWOOD, the Sea.

SOW-BREAD, or *Cyclamen Europæum*, L. an exotic plant, sometimes cultivated in the gardens of the curious. There are five species of this diminutive herb, each of which produces several varieties ; all bearing beautiful fragrant white, reddish, purple, or flesh-coloured flowers.

All the species of the sow-bread may be propagated by their seeds ; and the respective varieties, by dividing their roots : they require a light, dry soil ; and to be planted in borders of walks : in case of severe frost, the plants should be sheltered by mats.

In a fresh state, the root of the sow-bread has an extremely acrid and burning taste ; but, when dried, it is almost totally divested of such property. It is recommended as an emetic ; or to be formed into cataplasms, for discussing scirrhus and scrophulous tumours.

Internally taken, it operates slowly, though with great virulence, as a purgative ; and is apt to inflame the fauces and intestines : but, when roasted in embers, it may be eaten with safety.—In Germany, an ointment is prepared from these roots, which serves the useful purpose of relieving costiveness, when rubbed on the abdomen.

If, however, the root of the sow-bread should have been inadvertently swallowed, or eaten among other vegetables, it will be advisable either to take an immediate emetic ; or, if some time have elapsed, to drink large portions of oily and mucilaginous liquors, such as the solutions of mutton-suet in milk, of gum-arabic, salep-powder, and similar demulcents.

SOW-THISTLE, or *Sonchus*, L. a genus of plants forming 13 species, four of which are indigenous : the principal are the following :

1. The *oleraceus*, or COMMON SOW-THISTLE, grows on cultivated ground, dunghills, and in hedges ; its yellow flowers appear from June till August.—The leaves of this troublesome weed are the favourite food of hares and rabbits ; they are likewise dressed and eaten among other culinary herbs. The roots have occasionally been converted into bread.—Sheep, goats, and swine, devour this vegetable, but it is not relished by horses.

2. The *arvensis*, CORN or TREE SOW-THISTLE, is perennial, thrives in clayey corn-fields, and on ditch-banks, where it blows in August.—It is remarkable, that the flowers of this plant follow, in a regular manner, the course of the sun.—Cows and goats eat this species, of which horses are exceedingly fond.—

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BECHSTEIN remarks, that the young shoots of the Corn Sow-thistle, when cut out in the spring, and mixed with bran, afford an excellent food for cattle and swine.

3. The *palustris*, or MARSH Sow-THISTLE, grows in watery places, and on the banks of rivers, where it attains the height of from six to ten feet; flowering in July and August.—While young, this plant furnishes nourishing food for cattle: hence it deserves to be cultivated in swampy meadows.—Its flowers, like those of all the thistles, are visited by bees.

SOWING, is the act of committing the seed of vegetables to the earth, in order to obtain a future crop.

This operation is performed either in the BROAD-CAST method, or by **DRILLING**: but, having already stated the respective advantages attending both, we refer the reader to vol. i. pp. 359-60, and vol. ii. pp. 166-82.

The most important objects in sowing are; 1. To commit the seed to the ground, at as early a period of the season as the nature of the grain, and the situation of the soil, will admit; and, 2. To place every seed at a proper depth, and distance from each other. Due regard to the former circumstance will be attended with great profit, particularly in the cultivation of turnips; as an early harvest will not only thus be obtained; but the roots will also be protected from the depredations of the fly.

Some agriculturists strongly recommend to "sow dry, and set wet;" but, where the soil has been newly turned by the spade, **DR. DARWIN** justly remarks, that no bad consequence can result from sowing, in general, during rainy

weather: such method, however, ought to be adopted with caution on *clay-soils* (see **CLAY-LAND**) that are much softened by long-continued rain; because, if the seed be put into holes, and a dry season follow, the water will necessarily evaporate, and an impenetrable crust will be formed on the surface, by the *setting*, or running together, of the clay. But this accident may, in some measure, be prevented, by sowing in the autumnal months, during moist weather.—See also **SEED**.

SOY, or **SOOJU**, a species of liquid condiment, which is imported from India, and is used as a sauce for fish. It is prepared from the leguminous fruit of the Soja (*Dolichos soja*, L.) a native of Japan.

The pods are first boiled, till they become soft; when equal parts of them, and of *muggi* (wheat or barley that has been coarsely ground), are thoroughly mixed. This preparation is then kept in a close vessel, and a warm place, for twenty-four hours, in order to ferment; after which, the mass is put into a pot, and covered with a large portion of common salt, when two *measures* and a half of water are poured over the whole. The compound is stirred, once at the least, every day, for the space of two or three months; and, at the end of that period, it is filtered; the expressed liquor being preserved in wooden vessels. Fresh water is next added to the same mass; which, after stirring it occasionally for several days, is at length strained; and the liquor, though of an inferior kind, thus rendered fit for use.

Soy possesses a strongly saline taste, but has only a slight aromatic

tic flavour: it is chiefly used at the tables of the luxurious; and is one of those artificial stimulants of the palate, which deserves no commendation, especially for vitiated or relaxed habits.

SPA-WATER, a chalybeate mineral fluid, which arises from numerous springs, and particularly from that of Pouhon, in the vicinity of Spa, in Flanders.

This liquid, when first drunk, possesses the remarkable property of inducing a slight degree of intoxication. It is preferable to common water; as it more effectually allays thirst, especially in febrile complaints, which are accompanied with foulness and dryness of the throat and fauces: it is also very refreshing, after the stomach has been debilitated by excess, or intemperance.

The Spa-water affords relief in numerous complaints, especially those of the alimentary canal; in diarrhoea, and other obstructions; as it restores the healthy action of the parts, while it promotes the usual secretions.

The dose varies according to the age and strength of the patient: it, however, seldom exceeds half a pint, which is repeated three or four times, in the course of the day. But, if the water be taken with a view to produce laxative effects, it will be proper to conjoin it with small portions of Rochelle salt, or similar gentle aperients.

SPADE, a well-known implement, which is principally employed in horticulture.

The *bit*, or blade of this tool, is composed wholly of iron, being about 8 or 9 inches broad, and a foot in length: the upper part is flat; and, in the centre, there is a hole or *socket*, in which is in-

serted a handle or shaft, being $1\frac{1}{2}$ inches in diameter, and about 3 feet long. It is employed for stirring and dressing the ground; the labourer thrusting it in, to the depth of ten or twelve inches, according to the nature of the soil may require.

The English spades, in general, are well calculated for heavy garden soils; but, as there are many situations, especially those abounding in sand and gravel, which might be more easily managed with a tool of a different shape, we have procured the following Cut, that represents the spade employed in Tuscany, and the northern parts of Italy.



It consists of an iron spear, which is somewhat concave, being also longer, and thicker, than the implement used in Britain: instead of the workman setting his foot on the top of the blade, he places it upon a piece of wood which crosses the shaft, three or four inches above the blade; though, we conceive, the distance need not exceed one or two inches.—The manner, in which this implement is used, varies in different places. Thus, at Geneva, it is thrust into the soil, *perpendicularly*; at Pesca, the earth is divided *horizontally*, or at least in a slanting direction; so that the mould is thrown to a greater distance before the labourer. The peasants of that country, indeed, have an excellent mode of using the spade, without undergoing too great fatigue: it consists simply in supporting and lifting up the handle of the implement (after it has entered the soil) on the knee; by which means they are enabled to penetrate to a greater depth, and consequently to bring up a larger quantity of earth to the surface.

SPANIEL, or *Canis avicularius*, a valuable species of the dog-kind, which is supposed to have been originally bred in Spain.

Spaniels are divided into three varieties, namely, 1. *Starters*, or *Pointers*, from their use in starting game; 2. *Setters*, which are employed only for the net; and 3. *Water-spaniels*, which are of service in recovering lost game, or fetching it out of the water. These animals are of various sizes, and colours; but the black sorts are held in the greatest estimation, on account of their superior scent: next are the pied or spotted spaniels; and those, which are of a plain liver-colour, are reputed to be the

best swimmers. The external appearance, however, is an uncertain guide by which to ascertain the relative qualities of these sagacious animals; as their excellence principally depends on the manner in which they have been trained.—Every species of dogs being subject to various disorders, of which we have already treated, the reader is referred to vol. ii. pp. 151-52.—See also MANGE.

SPAR, the *PONDEROUS*; *Barytes*; or *heavy earth*, a name given to a fossil naturally combined with the sulphuric or carbonic acids, and found in different parts of England, particularly in the counties of York and Derby.

This mineral is manufactured into vases, and other ornaments for chimney-pieces; but its principal use in domestic economy, having been already stated, vol. iii. p. 473, we shall only remark, that the ponderous spar may be procured in a very pure state, for medicinal purposes, by the process which VAUQUELIN and FOURCROY have adopted; and a translation of which has been given in Mr. NICHOLSON's *Journal of Natural Philosophy*, &c. vol. i. p. 535.—It would, however, be hazardous to mention the disorders, and doses, in which this powerful remedy is employed: hence parents should not suffer children to use the picture-frames, egg-stands, and other trinkets made of Derbyshire spar, by way of playthings.

SPARAGUS. See ASPARAGUS.

SPARROW, the *COMMON*, or *DOMESTIC*, *Fringilla domestica*, L. a well-known bird, which abounds in Britain, particularly in the vicinity of villages and towns.

Sparrows construct their nest beneath the eaves, and in the holes of

of walls, roofs, especially in those of willow-trees, where they lay five or six eggs of a pale-reddish colour, spotted with brown. These birds are very crafty, and voracious; committing great depredations in corn-fields, where they partake of every species of grain: on the other hand, they are also useful, by devouring numerous worms, insects, and particularly the green caterpillar. But, in situations where sparrows are very troublesome from their numbers, they may be easily taken, by constructing a trap of unpeeled oziars, about two feet in diameter, nine inches deep; and resembling in its form a *fish-pot*. The tunnel is somewhat *dished*, having an inverted cone in the centre, which extends to within the space of one inch from the bottom of such basket; the opening, formed by the points of the twigs, being an inch in diameter. This trap must be baited with wheat, or other grain; and, when the birds have entered through the internal aperture of the cone, they cannot escape.

For the protection of fields, gardens, and especially of wall-fruit, from these predatory birds, we can suggest the following expedient. Slips or pieces of spangle-metal (plate-foil) six inches long, and three broad, should be suspended on long poles by means of strings, about half a yard in length, and fastened to the top: by the agitation of the wind, they will occasion a continual crackling noise, which is so terrifying to sparrows, that they will not venture to approach the vicinity of such scare-crows: in fields, however, the latter ought to be placed at a distance of about 12 or 15 yards square from each other.

SPARROW-HAWK: See **HAWK**, the Common.

SPASM, an irregular and involuntary contraction of the muscles, generally accompanied with painful sensations: this complaint has, of late years, made such rapid and formidable progress, especially among the female sex, as to demand serious attention.

Spasms are either *general*, where many or most of the muscles are attacked (as in *tetanus*, *catalepsis*, &c.); or *partial*, when the contraction is confined to single muscles, for instance, of the jaw, of the throat, and other parts, which have been stated under their respective heads.

Among the chief, pre-disposing causes, is an irritable, weak, nervous system; while the occasional ones are, passions of the mind; injury produced by external violence, by poisons, of every description; worms; suppressed perspiration; cosmetics and lotions; repelled cutaneous eruptions; and whatever may induce an increased action of the nerves and muscles.—Nothing, indeed, has so evidently contributed to the frequency of this affection, as the defective *modern education*, particularly of females; and according to which, *children* are considered as adults; they are allowed to read seductive books; to dress in an improper, or at least, unbecoming manner; and even infants are suffered to partake of tea, wine, and spirituous liquors, under the pretext of using them as medicines.

The danger attending spasmodic paroxysms, depends on the greater or less violence of the attack:—if they proceed from too profuse evacuations, there is great danger to be apprehended; as the patient is already

already exhausted.—Where spasms are occasioned by the taking of mineral or animal poisons; or, if the patient labour under an acute fever, the event is generally fatal.

Cure :—The first step will be to remove the irritating cause; and next, to restore tone to the organs: thus, if the spasm originate from an injury by a sharp instrument, such as a needle, especially if a piece of it remain in the wound, it ought to be immediately extracted.—During the fit, clysters made of a decoction of chamomile flowers, with a dram of ipecacuhana, asafetida, or other antispasmodics, to be repeated every two or three hours, will afford the greatest relief: beside these, recourse may be had to warm-baths, frictions, and the application of volatile liniments.—If the teeth are not too closely shut, half a tea-spoonful of either the tinctures of castor, asafetida, or valerian, diluted with a table-spoonful of water, may be introduced through the mouth.—Next, it will be necessary to regulate the treatment according to the cause of the malady. If it arise from a suppression of cutaneous disorders, blistering plasters, and other artificial issues, will be the most proper means of restoring the discharge of humours: if it proceed from too tight shoes, or other garments, the part should be rubbed with warm oil, till it become soft; and then a tight bandage be applied around it: the leg should afterwards be bathed in cold water impregnated with scales of iron, or rubbed with volatile liniment:—if induced by worms (which see) suitable remedies must be administered.—But, where it originates from mental causes, the cure itself ought to consist

of moral remedies; as physical means would, in general, be found inadequate.

With a view to re-invigorate the system, and to prevent future attacks, decoctions of quassia, wormwood, chamomile, Peruvian bark, valerian, and other antispasmodics, may be taken with advantage, especially when conjoined with cold bathing; and, in cases of worms, with the liberal use of red-port; a glass of which may, for that purpose, be drunk every morning, on an empty stomach.

SPATLING-POPPY, **WHITE BOTTLE**, or **BLADDER CAMPION**, *Cucubalus Behen*, L. a native perennial, which grows in corn-fields, dry meadows, and pastures: it flowers in July and August.—The leaves of this vegetable, when boiled, possess the flavour of pease; and are by the Gothlanders advantageously applied to erysipelatous eruptions. The flowers are eagerly visited by bees, as well as by the most beautiful butterflies, in twilight.

SPAVIN: See **BONE-SPAVIN**.

SPAWN: See **ROE**.

SPEAR-MINT: See vol. iii. pp. 216-17.

SPEARWORT, the **GREAT**, or *Ranunculus Lingua*, L. an indigenous perennial, growing in wet pastures, and at the sides of lakes: it flowers in the months of June and July.—The stem of this poisonous plant is very thick, and attains the height of two feet; the leaves have no stalks; and the large bright-yellow, glossy flowers, appear on the extremities of the shoots. The whole is extremely acrid, and if any part of this herb be eaten by cattle in a fresh state, it is apt to produce fatal distempers.

SPEAR-

SPEARWORT, the **LESSER**, or *Ranunculus Flammula*, L. is also a native perennial, growing on bogs, swampy meadows, and the sides of rivulets; flowering from June to September.—It is eaten by horses, in which it occasions many concealed disorders, but is refused by cows, goats, sheep, and hogs.—This plant is very acrid; if externally applied, it inflames and blisters the skin:—its distilled water is a most powerful *emetic*, operating as soon as it is swallowed; and Dr. WITHERING states, from his own experience, that, in cases of poison having been accidentally swallowed, or in which it becomes necessary to produce an immediate vomiting, such distilled water is preferable to any other preparation; as it does not excite the painful contractions, which are sometimes consequent on the use of white vitriol, and thus defeat the object for which the latter is administered.

SPECIFICS, are medicinal drugs, or compounds, the virtue and effect of which are supposed to be peculiarly adapted to certain disorders; or they are said to be calculated to expel some hurtful humours; or, lastly, they have been observed to remove the cause of a determinate disease, in consequence of their speedy action, though inexplicable to mankind. Thus, the Peruvian bark is reputed to be a specific in intermittent fevers or agues; opium, for mitigating pain; magnesia, for absorbing acidity in the stomach, and relieving the heart-burn; as well as the various antidotes.

Although impositions of a dangerous tendency are practised with *specifics*, especially those advertised in the daily prints, yet it cannot be denied, that such remedies,

in certain cases, *may be useful*; while, in others, they will be unavailing, and often attended with mischievous effects. We have in another place remarked, that in those diseases which uniformly arise from the same cause, as in agues, the small-pox, measles, &c. the utility, or rather admissibility, of specifics, may be rationally, tho' hypothetically, inferred. But, even in such instances, how is it in the power of the ignorant, or those who are unacquainted with the laws of human organization, to determine either the propriety, or dose, of a powerful medicine, requisite in a particular case? It appears, therefore, to be equally hazardous, as to entrust a man's whole life and fortune to the capricious wheel of the lottery. Nay, the more or less beneficial operation of drugs, frequently depends on a trifling incidental cause, or circumstance, which often eludes the attention of the most vigilant practitioner; and yet untutored persons are apt to believe, that there is no easier trade than that of dispensing medicines;—though physicians, when occasionally attacked with disease, rarely venture to prescribe for themselves. So far, indeed, the vulgar apparently possess advantages superior to those claimed by the profession. On the other hand, the enlightened part of the community know the value of medical assistance, in the hour of danger; and barely commiserate the blind believers in *quack-medicines*, without contributing the least towards eradicating such pernicious weeds.—We shall conclude with observing, that, as the drinking of wine, or other intoxicating liquor, does not affect every person in a similar,

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or uniform manner, so is the operation of medicines necessarily attended with different effects, on various constitutions; and even on the same patient, at different times.—See also *NOSTRUM*, and *QUACK-MEDICINES*.

SPECTACLES, a well-known and useful optical contrivance, in order to aid the eyes of the aged, or young invalids of defective vision, by means of two appropriate lenses. Those used by *short-sighted* persons, are generally concave; as the spectacles employed by the *far-sighted*, are convex.

The choice of spectacles being an object of great importance, to all who are anxious to preserve their eyes, we shall select a few rules from Mr. ADAMS's valuable *Essay on Vision*; and the Editor's *Lectures on Diet and Regimen*.—By a careful attention to such directions, the failure of sight may be retarded, and the eyes greatly relieved.

Those, who stand in need of spectacles, ought at first always to chuse such as represent objects, without enlarging or diminishing them; and which, on being placed near the eye, exhibit printed characters clearly and distinctly, without straining that organ. It will, therefore, in every instance, be advisable to consult the artist of whom the glasses are purchased: for, though every person must eventually determine what lenses afford him the most accurate vision, the former will thus be enabled to accommodate them to the eye of the latter, with greater certainty and advantage. Besides, the fatigue of trying a variety of glasses, will thus be obviated; and the purchaser will procure a pair, best adapted to the structure of his

eyes.—*Short-sighted* persons ought always to make a very gradual allowance in changing their spectacles, so as to select others which magnify a little more than the preceding pair, though somewhat less distinctly, without obscuring the object. Thus, their sight will be imperceptibly improved; and, after making use of less concave lenses, the defect of vision may, in process of time, be entirely remedied. These transitions, however, ought not to be *sudden*; lest the resources of art should be too early exhausted. And, as it would be difficult to meet either with a pair of glasses in the shops, that exactly fit both eyes, or with a person whose organs of sight are both of a size and construction perfectly equal, it rationally follows, that such important choice should be separately made, with respect to each of these useful organs.

Spectacles are generally transparent and colourless; though sometimes *green lenses* are preferred by those, whose eyes are unable to support a vivid light. Such colour is believed to be the most soothing to the human eye; though it tends, at first, in some degree to darken the object. Hence, this shade will prove beneficial only to persons who possess strong, but irritable eyes; yet even such individuals should not indulge in it, if light-coloured objects continue to assume a reddish tinge, after having tried the experiment for a few days. In all cases, however, spectacles ought to be employed only in writing, reading, or similar occupations that render this artificial aid necessary; and during which, the eye is retained at an uniform distance.

In December, 1793, a patent was

was granted to Mr. JOHN RICHARDSON; for his invention of a machine that may be applied to spectacles or glasses, and pebbles of every kind. As, however, no distinct idea can be formed of his contrivance, without a proper delineation, we refer the reader to the 10th volume of the *Repertory of Arts*, &c. where it is described, and illustrated with an engraved figure. Hence, we shall only observe, that the chief object of the patentee's invention, appears to be that of preventing the necessity of employing two pair of spectacles, where these are occasionally required; as two distinct sights may thus be obtained, for any purpose, according to the desire of the wearer.

SPEECH, in general, denotes the faculty of expressing thoughts, by means of articulate sounds; though it is likewise employed by grammarians, to signify a series of words properly arranged.

The power of speech distinguishes man from all the inferior animals: for, though the latter are enabled to express the sensations of pain or pleasure by their cries, yet the former only is possessed of that admirable combination of sounds, the origin of which will probably ever remain concealed. — Indeed, the parrot, cuckow, and a few other birds, can utter certain notes, which may be divided into syllables; but these are imitative, rather than natural, and serve to convey no original information; for it has been observed, that such creatures, when provoked to anger, utter only inarticulate cries. On the other hand, the speech of man may be improved by art, and modulated by practice, so as to express, with wonderful accuracy, the different emotions and passions

of the mind: nay, his voice, in rousing the social affections, is far superior to music. — For the improvement of that valuable faculty, the reader will consult the heads of ARTICULATION, PRONUNCIATION, and READING, where we have given a few concise rules, and pointed out the best writers on each subject.

SPEEDWELL, or *Veronica*, L. a genus of plants comprehending 54 species, 17 of which are indigenous: the principal of these are the following:

1. The *Beccabunga*: See BROOK-LIME.

2. The *Chamædrys*: See GERMANDER, the Wild.

3. The *officinalis*, COMMON SPEEDWELL, MALE SPEEDWELL, or FLUELLIN, is perennial, grows on heaths, and in barren grounds; flowers from May till August. — The leaves of this vegetable are slightly bitter and astringent: formerly, an infusion of them was highly prized, as a domestic remedy in coughs and asthmatic complaints. — In a decoction with iron filings, these leaves yield a black dye for leather. — The plant is eaten by cows, sheep, goats, and horses: but refused by hogs.

4. The *scutellata*, or NARROW-LEAVED SPEEDWELL, thrives on poor swampy soils, and flowers from June to August. — It affords grateful food to geese and ducks.

5. The *Anagallis*, or NARROW-LEAVED PIMPERNELL-SPEEDWELL, grows in slow streams and shallow ponds, where it flowers in July and August. — This species may be eaten both as salad, and among other culinary vegetables.

SPELTER: See ZINC.

SPERAGE: See ASPARAGUS.

SPERMACETI, a flaky, whitish,

fish, somewhat unctuous substance, and nearly destitute of smell; being obtained from the head of the *Physeter macro-cephalus*, L. a species of whale.

As the manner of preparing this expensive article is studiously concealed, we shall only observe, that good *spermaceti* is perfectly white, glossy, and semi-transparent; rather soft and oily to the touch, though friable and dry; its taste resembles that of fresh butter, and its smell is faint, like that of tallow. It is said to be often adulterated with wax; but such fraud may be speedily detected, by the peculiar smell of the latter substance, and by the dullness of the colour. A preparation of the oil obtained from the tail of the whale, is likewise vended for genuine *spermaceti*; but, as it assumes a yellow shade on exposure to the air, such imposition may be easily discovered. It will, however, be necessary, in all cases, to preserve *spermaceti* in vessels, closely secluded from the atmosphere; as this drug is apt to become rancid, and to acquire a disagreeable colour; though it may be restored to its original purity, by steeping it in a ley, composed of quick-lime and alkaline salts.

Coarse or raw *spermaceti*, pays, on importation, in British ships, the sum of 19s. 5½d. per cwt.; and, if *refined*, it is subject to the sum of 8½d. per lb. The quantity imported, however, being not only inadequate to the demand, but also grossly adulterated, Mr. SMITH GIBBES (now Dr. GIBBES of Bath) proposed, in the 2nd Part of the *Philosophical Transactions of the Royal Society*, for 1794, to convert animal muscles into a fatty substance, resembling

spermaceti: His chemical process consists in enclosing the carcass of a horse, cow, &c. in a box perforated with holes, and immersing it in a clear stream or river, for the space of a month, or longer; when it will be converted into a mass of unctuous matter. A certain portion of nitrous acid (*aqua fortis*) is next poured on this *cheesy* substance, in order to discharge the offensive smell, and separate the fat in a pure, though somewhat yellowish, state. Such colour may, however, be removed, and the whole tolerably bleached, by submitting it to the action of the oxygenated muriatic acid. Dr. GIBBES farther observes, that this remarkable conversion may be effected in the course of *three* days, by pouring nitrous acid on a piece of lean meat. Nay, the illustrious Lord BACON mentions the following curious circumstance in his work, entitled "*Sylva Sylvarum*;" namely, that the flesh of animals may be changed into a fatty substance, by cutting it in pieces, which are to be put in a glass covered with parchment, and thus allowed to stand six or seven hours in boiling water. "It may be an experiment of profit (says BACON) for making grease or fat, for many purposes; but then it must be made of such flesh as is *not edible*, as horses, dogs, bears, foxes, badgers, &c." It appears, likewise, from Dr. GIBBES's Memoir, that the putrefactive process is not necessary for effecting this change; as it would waste a considerable portion of flesh, that might serve to form a larger mass of waxy substance.

Great quantities of *spermacet* are annually consumed in the manufacture of candles and tapers, which are preferable to those made

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of wax; as the former burn not only brighter, and are of a finer colour, but, when genuine, do not stain, or grease the finest silks, linens, or cottons.—This drug is also used as a cosmetic, for softening and cleansing the skin. In medicine, it is chiefly recommended in the form of an emulsion, with distilled waters and the yolk of eggs, for relieving various affections of the intestines; coughs arising from defluxions of acrid humours; &c.—Spermaceti is also dissolved in oils, and beneficially applied to bruises, sprains, and similar injuries; as it contributes to mitigate pain.

SPICE, a general denomination of aromatic drugs, possessing hot and pungent properties. Such are ALL-SPICE, NUTMEG, PEPPER, the seeds of the CARAWAY and CARDAMOM, GINGER, MACE, SALT, &c. of which we have given an account, in the progress of this work. Hence, it will be useful here, to subjoin a few remarks on the general properties of spice, and conclude with enumerating several substitutes for the imported drugs, that deserve to be more generally cultivated.

The chief culinary use of spices, is that of serving as an ingredient in sauces, or for seasoning different articles of food, either with a view to render them more palatable, or to obviate some hurtful effects, such as flatulency, acidity, &c. Nevertheless, condiments are mostly of a hot and stimulant nature, tending to irritate the nerves, and ultimately to relax the stomach: hence they ought to be employed with moderation, and only with provisions that cannot be easily digested without them; for the daily use of pungent drugs at

the table, necessarily excites thirst; and many persons thus contract the ruinous habit of committing excess in fermented, vinous, or spirituous liquors.

Among the various plants, which merit the attention of gardeners, with a view to serve as substitutes for Indian spice, we shall mention the following:

I. MONARDA, or INDIAN HOREHOUND (*Monarda Zeylonica*, L.), a native of Ceylon, but which thrives in the open air of our climate. There are two species of this plant—the *fistulosa*, and *didyma*: the leaves and blossoms of both possess a very delicate fragrance; so that they may be used for making tea, and for imparting a fine flavour to made wines, or brandy. But the most useful part of this vegetable, is its aromatic seeds, which M. ZIZMAN, a German clergyman, has lately cultivated to a great extent, and found them equally serviceable in domestic economy, as the most costly spices obtained from the Indies.

II. BASIL (*Ocimum*), a native of warm climates, consisting of eight species; these are propagated by seeds, and will also thrive in the open air of this country: if placed in a green-house, even their seeds attain to maturity. The following three species are the principal: 1. The common Basil (*O. vulgare*); 2. The Citron-flavoured Basil (*O. citri odore*); and, 3. The Pink-scented Basil (*O. caryophyllum maximum*). The leaves of all these plants should be employed in a dried state; as they are too penetrating while fresh: those of the last kind, in particular, may serve as excellent substitutes for nutmeg and mace, in tarts, pies, mulled wine, and other preparations.

III. GAR-

III. GARDEN-THYME (*Thymus vulgaris*) is a spicy herb, the fragrant blossoms of which should be collected, dried, and used like those of the preceding.

IV. SAVORY: See p. 24, of this volume.

V. MARJORAM: See vol. iii. p. 167.

VI. CICELY: See vol. i. p. 527.

VII. SAGE, the Balsamine: See p. 9, of this volume.

VIII. TARRAGON; which see.

IX. SPIGNEL: See next page.

Beside these, we shall remind the reader of a few other spicy plants commonly met with, in British gardens; for instance, fennel, coriander, mustard, caraway, rue, mint, penny-royal, balm, mugwort, &c.—When compared with some of the foreign drugs, they excel many of the latter, both in flavour and virtues, so as to render their importation superfluous: nay, the untutored Indians may justly smile at the folly of Europeans who, instead of encouraging the culture of native plants, or such as readily grow in their climates, send the money earned by the industry and hard labour of their husbandmen, over the tempestuous ocean—frequently at the loss of many valuable lives.

Spices are subject to various duties, which are stated in their respective places. Hence it remains only to be added, that all spicery is prohibited, by the 13 and 14 CAR. II. c. 2, to be imported from Germany and the Netherlands, except cinnamon, cloves, mace, and nutmegs. These articles are permitted by the 6 GEO. I. c. 21, the 8 GEO. I. c. 18, and several subsequent acts, to be imported from

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any country, in British vessels legally navigated.

SPIDER, or *Aranea*, L. a genus of insects comprehending 50 species, of which the following are the principal; namely:

1. The *Common House-Spider*, is generally of a black-colour; has eight legs, each of which is furnished with three joints, and terminates in three crooked claws. This insect has eight eyes; and, in the fore-part of the head, there is a pair of pincers, or claws, with which it kills flies, &c. for food. It is also provided with five warts or prominences, at the extremity of the abdomen, through which its viscous filaments are evolved.

Spiders abound in almost every house, spinning their webs in corners of the ceiling, where they are not disturbed. The females are very prolific, laying from 4, to 500 extremely minute eggs; and, tho' both sexes mutually devour each other with great ferocity, except in the breeding season, their numbers are not perceptibly diminished.

These insects are remarkable for their industry: their appearance, however, excites a degree of disgust in many weak-minded persons, who are apt to persecute and destroy them, without mercy. But, independently of their utility in reducing the number of flies that appear during the summer, they afford a very accurate *natural barometer*; because the celerity, or indolence, with which they work, indicate the approaching variations of the atmosphere. Thus, if the weather be about to change, and become wet, or windy, the sagacious creatures make the terminating filaments that support their web,

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web, uncommonly short. But, if such threads be extended to an unusual length, the weather will remain serene for ten or twelve days, or for a longer period, according to the proportionate extension of the former. On the contrary, when the spiders are totally inactive, rain will shortly follow; but, if they continue to spin during a shower, it is a certain indication, that the rain will speedily cease, and be succeeded by calm, fair weather.

2. The *Calycina*, or Garden Spider, varies from the preceding species only in its having a round, pale-yellow belly, and two hollow points. It inhabits the *calyces*, or cups of flowers, after the floral leaves are decayed; where it preys upon bees, and other flies, that resort thither for honey.—This insect yields a kind of silk, which is by some deemed little inferior to that produced by the worm; but, as the filaments of the former are, in the opinion of REAUMUR, not equal to those of the latter, either in strength or lustre, they are never employed in manufactures.

SPIDER, the RED, or SCARLET TREE-MITE, *Atrius buscarum*, L. a small insect, having a roundish body, and a smooth, glossy skin. The colour is a deep-red, and the whole animal appears to be distended, and ready to burst. It frequents currant and other fruit-trees; but is particularly destructive in hot-houses. Hence gardeners have resorted to different methods of extirpating them, and especially that of sprinkling them with a strong ley of wood-ashes; but, as the saline particles of this liquor are very hurtful to tender plants, it will be more advisable to remove such vermin, by means of a common painter's brush;—their

depredations may likewise be prevented, by keeping the hot-house perfectly clean.—See also the articles INSECTS, vol. iii. p. 19, and PINE-APPLE, vol. iii. p. 303.

SPIDERWORT, the MARSH, MARSH-TOFIELDIA, or SCOTCH ASPHODEL, *Anthericum calyculatum*, L. (*Tofieldia palustris* of Drs. SMITH and WITHERING), a native perennial, which grows in bogs, on mountains in Scotland, and flowers from July to September.—This plant, though useless in domestic economy, deserves some notice; because it may serve as a guide to dig for *peat*, in situations destitute of sea-coal.

SPIGNEEL, or SPICKNEEL, *Aethusa Meum*, L. a native perennial, growing in mountainous pastures, principally in the northern counties, where it flowers in the month of May.—The roots and seeds of this vegetable have a pleasant aromatic smell, and a hot, bitterish taste. They have occasionally been used as *carminatives*; and also been administered in tertian agues. At present, they are seldom employed, either in domestic economy, or in medicine; though Dr. WITHERING observes, that they will often answer as substitutes for pepper, or other pungent aromatics.

SPIKE-OIL, the name of an essential oil distilled from the LAVENDER-SPIKE, considerable quantities of which, are used by varnish-makers, painters in enamel, &c.—See also vol. iii. p. 72.

SPINACH, or SPINAGE, the COMMON, *Spinacia oleracea*, L. an exotic plant, cultivated in Britain, for culinary purposes. If intended for *winter-use*, it is propagated by the seed, in beds of light, rich earth, towards the end of July, and

either by means of a wheel, or sometimes with a distaff and spindle: but, as the wheels commonly employed for this purpose, are awkward and inconvenient, Mr. ANTIS, of Fulneck, near Leeds, in 1793, submitted to the inspection of the Society for the Encouragement of Arts, &c. a model of an improved spinning-wheel; for which they conferred on him a bounty of 20 guineas.—We have, therefore, procured an engraving of this useful domestic machine, for the benefit of our country readers.

Description of the Plate representing MR. ANTIS'S Improved Spinning-Wheel.

The usual method of stopping the wheel, with a view to remove the yarn from one staple on the flyer to another, necessarily occasions great loss of time; but, in Mr. A.'s contrivance, the bobbin is so arranged, as to pass backward and forward, in order to prevent any interruption; and at the same time to obviate both the breaking of the thread, and losing the end: hence, the spinner is enabled to perform more work, in a given time, than is practicable by any other spinning-wheel. Such object is effected, by extending the axis of the great wheel through the pillar next the person spinning; and forming it into a pinion of one leaf, A; which catches into a wheel, B, seven inches in diameter, having on its periphery 97 teeth; so that 97 revolutions of the great wheel require only one of the smaller wheel. On the latter, a wire-ring, c, c, c, is fixed; which, being supported on six legs, stands obliquely to the wheel itself; touching it at one part, and projecting nearly three-quarters of an inch at the

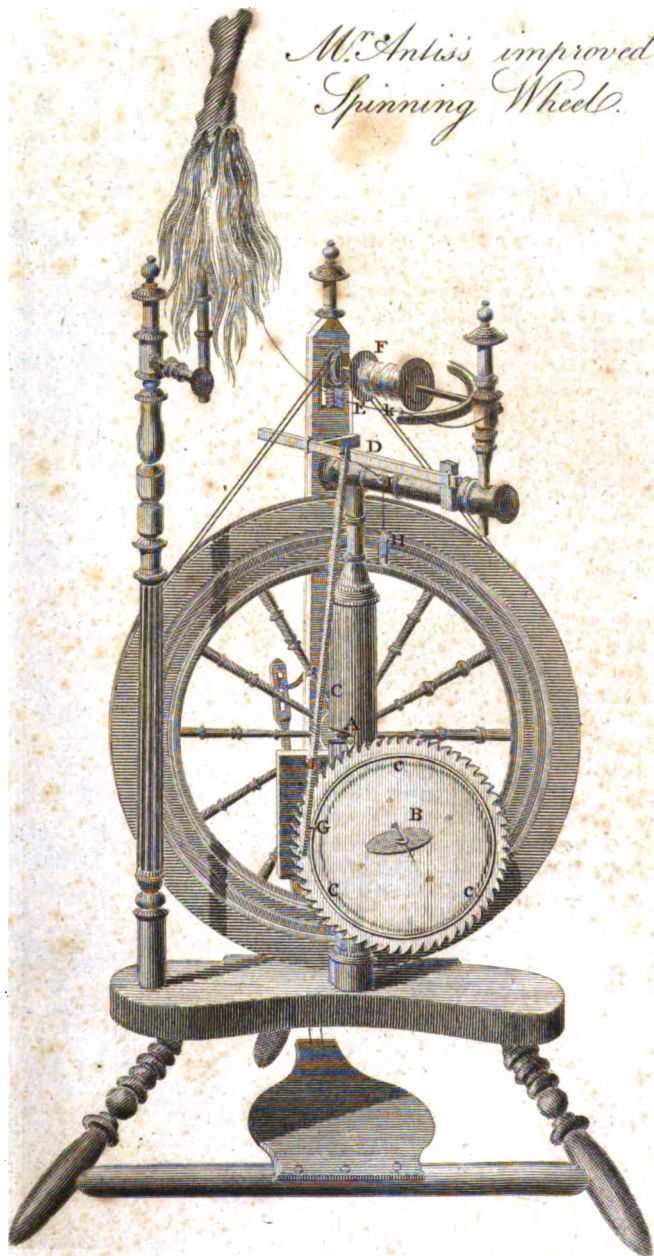
opposite edge. Near the side, of this wheel, is an upright lever, C, about 15 inches in length, moving on a centre, three inches from its lower extremity, and connected at the top with a sliding bar, D. From such bar rises an upright piece of brass, E; which works in the notch of a pulley, and drives the bobbin F, to and fro, accordingly as the oblique wire forces the pin G, in or out, during the revolution of the wheel.

In order to regulate and assist the alternate motion, a weight, H, is suspended by a line from the sliding-bar; and, passing over a pulley I, it rises or falls, as the bobbin advances or recedes; tending constantly to keep the pin in contact with the wire. In consequence of this construction, the flyer requires only one staple; which, being fixed near the extremity K, the thread entering through, is regularly laid on the bobbin, by the rotary motion of the latter.

Since Mr. ANTIS presented the model of the machine here described, he has made several alterations, which greatly contribute to its perfection; and for which the Society, in 1795, rewarded him with the additional sum of 15 guineas. As we conceive, that an account of these improvements will be interesting to every industrious housewife, we shall concisely state them, together with Mr. A.'s remarks.

1. At every revolution of the wheel, in his former machine, the pinion with one leaf occasioned a very disagreeable catch, while the bobbin moved only by jerks, and did not receive the thread in an uniform manner. With a view to remedy this inconvenience, Mr. ANTIS has adopted the motion of an endless screw, working a toothed wheel,

*Mr Antiss improved
Spinning Wheel.*



wheel, on which is fixed a heart-shaped piece of brass.

2. As the spinner should always be enabled to hold the thread at pleasure, and not *let it in*, till it be sufficiently twisted, Mr. A. observed that, the bobbing moving on a square, its motion was so impeded, that when it began to be filled with thread, it became immoveable, notwithstanding the action of the weight; and, when the thread was afterwards left at liberty, it *started* at once half an inch and upwards.

3. As, in the wheels of the common construction, and also in those of Mr. ANTIS's first improvement, the friction of the bobbin could be augmented only by stretching the common cord, which was not practicable, without making the wheel revolve with increasing difficulty, particularly when the bobbin was nearly filled; he was induced to make use of a single cord, the sole design of which is to turn the flyer; and, in case it should become slack, it may be contracted or shortened, without requiring any screw.

Farther, to regulate the friction of the bobbin, Mr. A. has fastened a neck of steel or brass to one end, which is kept steady by a vice, or by pincers, fixed to the sliding-bar (D. in the plate above described). Such vice is directed to be made either of two elastic springs, furnished with wooden tops; or wholly of wood *boshed* with leather, and provided with a spring, under the shoulder of the screw, to answer the same purpose. By tightening this screw to a greater or less degree, the friction may be most accurately regulated, without impeding the velocity of the whole; as no additional machinery obstructs the general motion. Mr. ANTIS,

therefore, concludes that a wheel, on this improved plan, will be found to run more freely than those with a double cord; a circumstance of the greatest importance, to a person whose daily livelihood is obtained by spinning: nay, even a lady who sometimes spins for her diversion, was much pleased with his *first* invention, and thought it might save a person at least two hours in a day. He observes, that his contrivance may be added to old spinning wheels of every construction; and that it would not considerably increase the price of a new machine, made according to his plan.

Such are the advantages derived from Mr. A.'s mechanical ingenuity, which have, from experience, been ascertained in Yorkshire: it is therefore to be hoped, that so useful a domestic implement will speedily be introduced into other counties of Britain.

SPIRITS, a general name given to ardent liquors, obtained by distillation.

Spirits are divided into two classes, namely, *foreign*, and *British*; the former includes ARRACK, BRANDY, and RUM: the latter comprehends GIN, and the various species of *malt-spirits*, known under the name of *British brandy*, &c. But, previously to their being consumed, or even offered for sale, they are *rectified*, or repeatedly distilled with the addition of alkaline salts, so as to bring them to the requisite degree of *proof*; in which state 100 parts of pure spirit ought to consist of 55 parts of alcohol, or spirit of wine, and 45 of distilled water. As, however, such salts deprive the liquor of its natural vinous flavour, the latter is generally mixed with *dulcified spirit of nitre*, till it acquire a degree of vi-

nosity that renders it little inferior to *French brandy*.

Spirituous liquors have, in every nation, been justly considered as objects of taxation. Hence it is provided by the statute 5 GEO. III. c. 43, that, if they be not imported in vessels of more than 100 tons, both the spirits and ships are forfeited; excepting, however, those spirits which are brought from the British sugar-plantations, and which, by the 6 GEO. III. c. 46, are importable in vessels of 70 tons.—Farther, no *AQUA-VITÆ*, or *brandy-wine*, may be brought to England, but in British-built ships, or in such as belong to, and are navigated by, the subjects of Britain, by the 12 CAR. II. c. 18, and the 27 GEO. III. c. 73.

With respect to the various duties and penalties imposed on British spirits, it deserves notice, that all fermented wash or wort, brewed for the purpose of extracting spirituous liquors from malt, corn, or other grain, is subject to the charge of 10d. per gallon, payable to the Excise. And, if any cyder, perry, or other wash (not brewed from grain, &c.) be prepared from British materials, for obtaining spirits for home consumption, they are chargeable with the sum of 9d. per gallon.

The Excise duty of 1s. 8d. per gallon is likewise payable on all wash, made from the refuse of foreign wine or cyder, with the design of distilling spirituous liquors for home consumption.—Farther, if any British spirits, manufactured in Scotland, and which do not exceed from 1 to 10, over *proof*, be imported into England, they are subject to the duty of 3s. 4½d. per gallon; and, if they exceed the degree of strength above mentioned

only 3 per cent. to the farther sum of 2s. per gallon.—A bounty of 3l. 12s. is allowed on every ton of British spirit that is exported.

Surprising as it may appear to many of our readers, who are unacquainted with *vegetable* nature, we may positively affirm, that a sufficient quantity of *wild* neglected fruit annually grows in this country, to produce an adequate supply of spirituous liquor, without using any *bread-corn*, for such wasteful purpose. Of this description, in particular, are the berries of the *DOG-ROSE*, *QUICKEN-TREE*, and numerous other native shrubs, that have been mentioned in the progress of the present work; and a recapitulation of which, will appear at the conclusion, in the *General Index of Reference*.

Good, pure spirits, ought to be perfectly clear, of a pleasant and strong, though not *pungent* odour, and of a somewhat vinous taste: when taken in small quantities, (and properly diluted), after violent exertions, they are preferable to strong beer; but they should never be used by way of *custom*, after eating heavy food, such as pork, ham, goose, duck, fish, &c.; for, instead of promoting, they greatly impede, and at length totally impair, *digestion*. Their intoxicating qualities render them highly improper during the *summer*, especially if they have been distilled over strong spices; being thus rendered more ardent, and pernicious to health; so that they frequently occasion *bald heads*, and *premature old age*.

SPIRIT OF WINE, an ardent, colourless liquor, destitute of any peculiar flavour: it may be obtained by distilling the *farinaceous* or *saccharine* roots, as well as the pulpy

pulpy fruit of vegetables, in general, by means of a common still, but more effectually in what is termed a water-bath (*balneum maris*); after which, the spirituous fluid is purified by repeated rectification; and, when divested of nearly all its aqueous particles, it is called *Alkohol*.

This expensive liquor is chiefly employed for dissolving gum-resins in the preparation of varnishes; for separating resins from the vegetable matters containing them; and also for making essences, tinctures, elixirs, and various other compounds, for medicinal use. It may, likewise, be applied with advantage to different parts of the body, especially in sprains and bruises; as it strengthens the vessels; but, if inadvertently swallowed in a pure state, and in a large quantity, it corrugates the membranous parts of the stomach; being attended with a temporary suspension of their functions, and sometimes even inducing apoplexy or palsy, which generally ends in death. Hence, spirit of wine ought to be preserved with the greatest caution, so that children or ignorant persons may not have an opportunity of *tasting* so deleterious a liquor.

SPITTING, of Blood. See vol. i. p. 283.

SPLEEN, is a spongy viscus, situated in the left side near the lower part of the stomach, under the ribs. This organ is supposed to be designed by Nature to prepare the blood for the secretion of bile in the liver. Its purpose, though inaccurately known, must be important to the animal economy; as indigestion, and a variety of other complaints, have resulted from splenetic affections.—It de-

serves to be remarked, that the term *Spleen* is frequently used to denote a disorder, which is more strictly, by physicians, called *hypochondriasis*.

The principal diseases of the spleen are inflammations, obstructions, and indurations. In the first case, the causes and symptoms are similar to those described under *inflammatory fever* (volume iii. p. 12): at the same time, a tumor and pain are felt in the left side; the latter increasing on pressure.—Chronic inflammations of the spleen, however, may also be consequent on diseases of the liver, such as the jaundice, piles, &c. The treatment will, therefore, chiefly consist in the application of the same remedies as are mentioned in the page above quoted; but, where the patient is of a plethoric habit, or was previously subject to the piles, leeches applied to the anus have proved of great service.—Calomel and antimony, taken internally, under judicious management, have likewise been attended with good effects.

If the spleen be obstructed or indurated, a pain and tumor will also be felt on the left side, bearing downward like a weight; the patient finding it difficult to lie down on that side: the bowels are generally costive; and respiration is impeded.—The *cure* of this affection requires the same method as is recommended for obstructions and scirrhus of the liver.—See *SCIRRHUS*.

SPLEENWORT, or HART'S-TONGUE, *Asplenium scolopendrium*, L. a native perennial, growing in the fissures of moist shady rocks, old walls, and at the mouths of wells; where it flowers in the months of August and September.

—The medicinal powers of this vegetable are highly praised for curing the bites of venomous serpents; in hypochondriasis; palpitations of the heart, &c.; of which, however, we have had no experience.

SPLENTS, in farriery, denote hard excrescences of various shape and size, appearing on the shank-bone of a horse.—Unless they arise from blows, or other accidents, few horses *put out* splents, after they are seven or eight years old; and, when occurring in young horses, they frequently wear off, and spontaneously vanish.

Splents, on their first appearance, should be well bathed with vinegar, or old verjuice; which often checks their farther progress: in some animals, purgatives and diet-drinks will contribute to remove watery swellings about the limbs, which frequently induce such malady.

According to Mr. **TAPLIN**, a radical cure may, in general, be effected by rubbing the excrescences, for a considerable time, twice every day, with the utmost force of the operator's hand; well moistening the part after each friction, with a little of the following liniment:—Take of camphorated spirit of wine, and spirit of turpentine, each 4 oz.; to be uniformly incorporated. Or, oil of origanum, and spirit of turpentine, each half an ounce; and camphorated spirit of wine 2 oz. to be duly mixed.—A pledget of tow, wetted with either of these preparations, ought to be fastened round the splent, with a proper bandage.

Should those powerful discutients fail of success, recourse must be had to the strongest mercurial ointment: a portion of the

size of a hazel-nut, ought to be chafed into the part affected, every night and morning, till two oz. of it have been used; applying the roller or bandage, as before directed.

But, if these various remedies be insufficient to procure relief, the best and most speedy method, will be that of extirpating the excrescence by the knife.—This operation may be performed by a longitudinal incision through the integuments (without bruising, hammering, &c.), then dissecting, and extracting the substance: thus, the cure may be completed by taking up a couple of stitches, and treating the part like a superficial wound.

SPONGE, or *Spongia*, L. a genus of animal plants, comprehending 50 species, the principal of which is the *officinalis*, or Common Sponge. It is imported from the Levant; being a soft, porous, light, substance, which easily imbibes water.

Sponge is of extensive utility in domestic economy, medicine, and surgery. If it be cut in small pieces, fried or dipped in honey, and given to vermin, it distends their intestines, and effectually destroys them (see vol. iii. p. 476). As it strongly adheres to the orifices of wounded vessels, it is advantageously employed as a styptic; often preventing the effusion of blood more effectually than the puff-ball or **AGARIC**.—When burnt and pulverized, it has been successfully administered internally, in scrophulous complaints, and cutaneous diseases, in doses of one scruple and upwards: it is also considered as a *specific*, on account of its efficacy in removing the glandular swelling of the neck, known

known under the name of *bronchocele*.—See WEN.

SPOON-WORT. See SCURVY-GRASS, the English.

SPOTS, are marks or stains accidentally occurring on linen, woollen, cotton, silk, or other stuffs.—Under the head of CLOTH (vol. ii. pp. 7-8) we have already communicated several methods of discharging spots from *woollen-cloth*: hence we shall, in this place, add another remedy which may be easily prepared; though we have had no experience of its effects:—Dissolve two ounces of pure pearl-ash in a quart of spring water, and add to this solution a lemon cut in small slices. Let the whole be properly mixed, and kept in a warm place for 24 hours; when the liquor should be strained, and the clear fluid decanted for use. It is asserted, that this compound, when poured on the stained part, instantaneously removes all spots, whether they arise from grease, pitch, or oil; and, as soon as they disappear, the cloth must be washed in pure water.—See also PORTABLE BALLS, vol. i. p. 153.

Ink-spots on *woollen* cloth, may be discharged by rubbing them with a composition, made of the white of a new-laid egg and a few drops of oil of vitriol, properly incorporated; afterwards washing the stain with pure water, and lastly, smoothening it with a piece of white cloth, or flannel, in the direction of the *nap*:—to remove ink from *silk* stuffs, it will be advisable to apply strong distilled vinegar, and wormwood-ashes, to the blotted part, which ought to be well rubbed with these matters, and then cleansed with soap-water.

Red-port on *linen*, we under-

stand, may be almost effectually cleared, by pouring warm milk on the stained parts, while they are in a wet state:—another, and perhaps more successful, method, is that of dropping the tallow from a candle on such wine-marks before they are dry; and suffering them to remain till the cloth is sent to the laundry; because *ink-spots* may, in this simple manner, be removed from linen.

SPRAIN, denotes an extension of the muscles, ligaments, and tendons, without dislocation: it generally proceeds from external injury; and is attended with pain, swelling, and inflammation. In treating this local affection, the first object should be, to check the swelling, and prevent the inflammatory symptoms. For this purpose, cold, astringent fomentations with water, ice, vinegar, &c. or, in a very recent case, camphorated spirit of wine, must be applied as speedily as possible: to relieve pain, where it is considerable, a few drops of laudanum may be added to the lotion.—The regimen recommended under the article INFLAMMATION, will here likewise be proper.—During, and for some time after, this treatment, the sprained part should be kept in a state of rest and relaxation.

SPRAT, or *Clupea sprattus*, L. a well-known diminutive fish, which is from three to six inches in length, and in shape resembles the HERRING.

Sprats are caught in numerous shoals in the river Thames, which they enter early in the month of November; continuing there till March: during which period they afford a cheap, and not unwholesome nutriment, chiefly to the poorer classes in the metropolis.

These

These fish are cured in the same manner as herrings, at Gravesend and Yarmouth : they are also occasionally pickled, in which state they are little inferior to *anchovies*, excepting that the bones of the former will not separate from the fleshy part, like those of the latter. —For an account of Mr. BATLEY's patent, for curing sprats, the reader will consult vol. iii. p. 463.

SPRING, a fountain, or source, whence water spontaneously rises from the bowels of the earth.

Various conjectures have been formed by naturalists, concerning the *origin* of springs; but, consistently with our limits, we shall only observe, that the most plausible theory appears to be that of Dr. HALLEY, who supposes them to originate from the rain and snow waters; which, penetrating through the soil, at length settle in the fissures of the earth, and form fountains or springs.

As water is indispensable to the health and convenience of mankind, many expedients have been devised, with a view to ascertain the particular spots, whence a supply might be obtained : we shall, therefore, state a few indications, or land-marks, by which that necessary article may be discovered.

1. As all mountains are colder in proportion to their height, the evening mist descends on them, particularly in damp situations, much sooner than on the vallies, and thus may indicate the existence of springs.

2. Another observation is suggested by Dr. DARWIN, in order to determine the existence of subterranean springs, in *rimy* mornings : — moist earth conducting heat better than dry soil, the rime will be dissolved more speedily on

those spots which are moistened by springs under ground, than on the adjacent parts.

Lastly, the rise of these natural fountains may be discovered during the winter, in wet ditches, by the growing of brook-lime, water-cresses, or similar aquatic plants : for such vegetables do not thrive in the ditches that become dry in the summer. And Dr. DARWIN remarks, that when those ditches which contain springs, are nearly dry, the direction of the current may be ascertained by the point, to which the leaves of the aquatic plants may *turn*, with as great a degree of certainty as can be effected by a level.

SPRING-GRASS, the SWEET-SCENTED, or VERNAL-GRASS, *Anthoxanthum odoratum*, L. an indigenous perennial, growing in meadows and pastures; flowering in the months of May and June.—This is one of the earliest British pasture-grasses, and occasions the delicate flavour perceptible in newly-made hay. It is eagerly eaten by cows, horses, goats, and sheep; on account of its aromatic taste, and juicy, nutritive nature.—Mr. SWAYNE, however, observes, that it abounds in wet lands, particularly on peat-bogs; and that it appears to be of little consequence; as it is neither very productive to the farmer, nor palatable to cattle.—Nevertheless, other agriculturists are of a different opinion; and Mr. SOLE (*Letters and Papers of the Bath and West of England Society*, vol. ix.) conceives that the vernal-grass would be an useful addition to meadows, by sowing it in the proportion of *one-eighth*. This judicious advice, every practical husbandman will be induced to adopt; as it is a well-known fact, that this fragrant

fragrant herb not only remarkably spreads, and increases in its bushy stalks, when cultivated in favourable situations, but it also effectually checks the growth of moss, in *sour meadows*.—It is farther remarkable, that the root of this grass possesses a strong odour, resembling that of *musk*.—The dried blossoms are, on the Continent, employed for imparting an agreeable flavour to snuff and tobacco.

SPRUCE-BEER, a kind of diet-drink, which is prepared in the following manner: Eight gallons of water are first poured into a cask, or other vessel; and a similar quantity of boiling water is added: 16 pounds of molasses are next mixed, together with a few table-spoonfuls of the *essence of spruce* (which is obtained from the cones of the *spruce-fir*). Half a pint of sweet yeast must now be put in; and the whole, after being well stirred, should be placed in a temperate room, for a few days, till the fermentation ceases. The liquor may then be bottled; and, in the course of a fortnight, it will be fit for use.

Spruce-beer has a peculiar flavour, which renders it disagreeable to the palate of many persons; it is, however, a most powerful antiscorbutic, and affords a wholesome beverage, particularly during the summer; as it does not affect the weakest stomach.

SPRUCE-FIR. See vol. ii. p. 279.

SPURGE. See **SPONGE**.

SPUR. See vol. ii. p. 67, and also p. 6 of the present volume.

SPURGE, or *Euphorbia*, L. a genus of plants, comprehending 110 species; 12 being natives of Britain; the principal of which are the following:

1. *The characias*, or Red Spurge,

grows in woods and hedges, where it flowers in the month of June.—The pulverized leaves of this plant, if taken in doses of from 15 to 25 grains, operate as a brisk purgative:—its juice, like that of all the other species of the spurge, is so extremely acrid, that it ulcerates every part of the body, with which it comes in contact. Hence, it is never used internally:—but, a single drop put into the cavity of an aching tooth, is said to have removed the pain, and at the same time destroyed the nerve. This corrosive liquid, however, may, according to Dr. WITHERING, be applied with safety to *warts* and *corns*; as it eradicates them in a very short time.

2. *The helioscopia*, or Sun-spurge. See **WARTWORT**.

3. *The Cyparissias*, or **CYPRUS SPURGE**, grows in dry woods (at Enville, in Staffordshire), where its yellow flowers blow in May and June.—Goats are exceedingly partial to this herb; and its seeds afford grateful food to pigeons.—The beautiful caterpillar, which is changed into the Spurge-butterfly, derives its nourishment from the leaves of this species.

SPURGE-FLAX. See **MEZEREON**.

SPURGE-LAUREL, or **LAUREL MEZEREON**, *Daphne Laureola*, L. an indigenous shrub, found in woods and hedges, principally in the county of York, where it flowers in March and April.—The whole of this vegetable, especially the bark of the root, is very acrid: it has been employed with success in rheumatic fevers, operating powerfully as a purgative. It is likewise an excellent vermifuge; but, as it possesses great acrimony, it ought never to be administered without medical advice, and in small

small doses, which should not exceed ten grains.—On account of its elegant green and yellow flowers, which appear in the early spring, and sometimes in the winter, this evergreen is cultivated in shrubberies; but it deserves to be remarked that its black berries, though eagerly eaten by pheasants, prove mortal food to man, and all the mammillary animals.

SPURGE-OLIVE. See MEZEREON.

SPURREY, or *Spergula*, L. a genus of plants comprising five species; three being natives of Britain. The principal of these is the *arvensis*, or Corn Spurrey, which grows in corn-fields, and sandy situations; flowers from July to September. This vegetable is eaten by horses, sheep, goats, and hogs; but is, according to WITHERING, refused by cows. BECHSTEIN, FUNKE, and other naturalists, however, inform us that the corn-spurrey is not only devoured with avidity by all cattle, but is also conducive to their health, while it remarkably tends to increase the milk of cows, and to fatten sheep. Hence this weed is industriously cultivated in Flanders; because it is so far superior to other pasture-grasses, that it continues green till a late period of autumn, and often throughout the winter. Its seeds are eagerly swallowed by poultry, and afford on expression a good lamp-oil: nay, the flour obtained from them, when mixed with that of wheat or rye, produces wholesome bread; for which purpose, it is often used in Norway and Gothland.

SPURS, a well-known contrivance, or machines consisting of plated steel, silver, &c. fitted to the hind-quarters of a horseman's boots, and furnished with a rowel, which

turns on an axis, in order to urge the animal to greater speed.

In July, 1786, a patent was granted to Mr. THOMAS CHESTON, for an invention of making spurs, and elastic spring-buckles. His improvement consists in giving the metallic substances the requisite forms, by means of dies, worked either with a hammer, or by machinery; after which they are rolled, and submitted to an oven, stove, or other place, heated by fire, till they become nearly red-hot. The spurs, &c. are then immersed in oil, water, turpentine, butter, or other matter, with the addition of salt, to render them hard; next, they are tempered by various processes, till they become elastic.—A more ample description of the patentee's contrivances is inserted in the 5th volume of the *Repertory of Arts, &c.*

On the whole, it will be allowed that spurs are weapons equally useless and dangerous, if used by unskilful horsemen, or applied to unruly horses; but, as fashion has greater influence on the actions of men than reason, we advise the novice in the equestrian art, to avail himself of those spurs, the rowels of which may, by means of a spring, be inflected towards the boots; in order to prevent accidents, when riding or walking with such cumbersome instruments.—For the same reason, we admire the dispassionate unanimity of a certain pacific society, the members of which never spur, but occasionally whip their phlegmatic horses, agreeably to the old, but excellent adage, “slow and sure.”

SQUILL, the COMMON, or SEA-ONION, *Scilla maritima*, L. an exotic plant, growing on the sandy shores

shores of the Levant, especially on those of Spain, and Portugal, whence considerable quantities of its roots are annually imported. The best sea-onions ought to be sound, fresh, and to contain a viscus juice: they are nauseous, bitter, and, if much handled, are so acrid as to ulcerate the skin.

The squill is a powerful stimulant, promoting the discharge of urine; and, if the patient be kept warm, a profuse perspiration. It is chiefly employed in cases, where the organs of respiration are clogged, or oppressed with mucus:—when combined with nitre in the proportion of from 4 to 10 grains of the dried root, with a double quantity of saltpetre, it has been greatly extolled for its efficacy in dropsical swellings, and inflammations of the kidneys. If the squill be taken in a large dose, it operates as an emetic; and, in some persons, as a purgative. It is often prescribed in the form of pills; though, when mixed with honey into an OXYMEL, it affords an useful medicine for obstinate coughs.—The roots of the sea-onion pay, on importation, the duty of 2s. 9d. per lb.

SQUINANCY-BERRIES. See CURRANT, the Black.

SQUINTING, or *Strabismus*, an affection of the eyes, occasioned by the optic axes not converging; in consequence of which, the organs of sight appear distorted.

Improper habits frequently induce this defect, while the eye and its muscles are perfect; for instance, in children, who accustom themselves to view different things at one time; or, who are placed obliquely towards any object that may attract their attention. Another cause is mal-conformation of

the retina, or such parts as serve to convey impressions to the point of vision; so that persons, thus situated, are obliged to turn the eye from the object to be investigated, in order that they may be enabled to behold it more distinctly.—Farther, it often proceeds from weakness, or defect of either eye, so that both cannot be mutually employed. Besides, it may be consequent on affections of the brain, epilepsy, terror, and defluxions of rheumatic humours.

The method of cure to be adopted in this unpleasant distortion, varies according to the cause. Thus, in children, and in cases of weakness of the eyes, it may be remedied by *mechanical contrivances*. Hence, when there is no organic defect in either eye, which is frequently the case with persons who squint from a depraved habit of moving their eyes, the disease may often be cured. Dr. DARWIN remarks (*Philosophical Transactions*, vol. 68), that in all the squinting people he had occasion to attend, one eye was less perfect than the other: these patients are, in his opinion, certainly curable, by covering the best eye many hours in the day; as, by a more frequent use of the weak eye, it not only acquires a habit of turning to the objects which the patient wishes to see, but gains at the same time, a more distinct vision: in both these respects, the better eye is under some disadvantage, which also facilitates the cure. This ingenious physician relates, in the same paper, a remarkable case of a boy, then five years old (now a reputable English clergyman at Edinburgh), who has the misfortune of viewing every object with one eye only at a time. Dr. D. directed a paper

paper *gnomon* to be made, and affixed to a cap; and, when this artificial nose was placed over the patient's real nose, so as to project an inch between his eyes, the child, rather than turn his head so far to look at oblique objects, immediately began to exert the eye which was nearest to them. But, having the misfortune to lose his father, soon after this method was begun to be followed, the child was neglected for six years, during which time the habit was confirmed in such a manner as seemed to leave little room to hope for a cure. Dr. D. however, being again called, attempted a second time to remove the deformity, by a similar contrivance. A *gnomon* of thin brass was made, to stand over his nose, with a half-circle of the same metal to go round his temples: these were covered with black silk; and, by means of a buckle behind his head, and a cross-piece over the crown of his head, this *gnomon* was worn without any inconvenience, and projected before his nose about two inches and a half. By the use of this machine, he soon found it less inconvenient to view all oblique objects, with the eye next to them, instead of the eye opposite to them.

After this habit was weakened, by a week's use of the *gnomon*, two bits of wood, about the size of a goose-quill, were blackened all but a quarter of an inch at their summits; these were frequently presented to him to look at; one being held on one side the extremity of his black *gnomon*, and the other on the opposite. In viewing these, they were gradually brought forward beyond the *gnomon*, and then one was con-

cealed behind the other: by such means, in another week, he could bend both his eyes on the same object for half a minute together; and, by continuing the use of the same machine, he was in a fair way of being cured.

Lastly, if squinting arise from any adventitious circumstance, such as terror, defluxions of humours, &c. the removal of those causes will also cure the disorder; but, where it originates from mal-conformation of the organs of vision, or has been so long neglected as to become *confirmed*, it is not in the power of art to afford any relief.

SQUIRREL, the **COMMON**, or *Sciurus vulgaris*, L. a lively little quadruped, abounding in the woods of Britain, as well as in other parts of Europe, Asia, and North America. Its head, body, legs, and tail, are of a bright, reddish-brown colour; though, in the northern climates, there are white and black squirrels, the coat of which changes to a fine grey in the winter, and affords an elegant kind of light fur.

These animals feed on acorns, nuts, the young shoots of trees, and particularly the cones of firs. They construct their nests with moss and dried leaves, in the branches of trees, where the females produce in April, or May, from 3 to 7 young, which may be easily domesticated; but their sharp fore-teeth ought to be extracted; as otherwise their severe bites may prove dangerous.

The hunting of squirrels affords amusement in autumn, and early in the winter, when these animals are fat: they are caught both for confining them in cages as objects

of curiosity, and for the table; as their flesh is very delicate, and possesses a sweet flavour.

SQUITCH-GRASS, the Blue. See **Creeping BENT-GRASS**.

ST. ANTHONY'S FIRE. See **ROSE**.

ST. JOHN'S-WORT. See **JOHN'S WORT**.

ST. VITUS'S DANCE, a spasmodic disorder, mostly incident to young persons of both sexes, from the age of ten to fifteen: it is distinguished by continual involuntary motions of the hands and feet; so that the patient appears in a manner to dance, while he is obliged to drag one leg after the other.

Causes:—Worms; suppressed eruptions; checked perspiration, &c.; but the peculiar affection of the muscles thus contracted, has hitherto eluded the researches of the physiologist.

However distressing this complaint be to the patient and his friends, it may afford some consolation, that it neither proves fatal nor permanent; and that frequently, after every mean has been employed, it spontaneously disappears.—A favourable change may, in general, be expected about the age of puberty.

Cure:—As it is often difficult to ascertain the cause of this malady, it will be proper to administer such medicines as are calculated to carry off worms (see the article **WORM**); and to allay the spasmodic motions. With the latter intention, antispasmodics and tonics, namely, Asafoetida, Valerian-root, Wormwood, Musk in conjunction with Bark and Port-wine, &c. have often been attended with good effects. Farther, the remedies directed in the **SPLEEN**, may also, with advantage, be so modified as to

be salutary in this complaint.—Lastly, we conceive that the tepid bath may always with safety, if not with uniform benefit, be resorted to; especially in an affection which obviously arises from a preternatural irritability of the nerves and muscles. On the other hand, the cold sea-bath will probably be of great service, when the skin of a robust patient is not in a dry, contracted state; and when there appears to be a sufficient degree of re-action in the system, to withstand the sudden shock of the water.

STABLE, an edifice erected for the reception and accommodation of horses.

The principal object in building stables, is the situation, which ought to be, 1. On a gentle declivity, in order that the urine, &c. may be carried off; 2. On a pure, airy spot, not exposed to noxious exhalations; and, 3. On dry, hard ground.—The walls must be moderately thick, and furnished with casements on the north and east sides; both with a view to admit air, and to receive the benefit of the rising sun. The windows should, at the same time, be provided with shutters, for excluding the light, in case it be deemed necessary for the animals to sleep during the day.

With respect to the paving of stables, it will be advisable to cover the part, on which the horses are to lie down, with oak boards, placed transversely upon a level; and which should be perforated with holes, for conducting the urine into the common drain. The other part should be paved with small stones; and the wall contiguous to the rack, ought to be lined with a wainscoat of sound oak.

When a stable is designed for several

several horses, the *stalls* should be made sufficiently wide to enable them to lie down, or turn round without inconvenience; while the partitions ought to be raised so high towards the head, that the animals can neither see, smell, nor molest each other. Lastly, the strictest cleanliness must be observed in the management of the stable, both in order to preserve the health of horses, and to prevent the generation of any contagious effluvia. In case, however, infectious distempers should prevail, it will be necessary to resort to the following process, in order to destroy the contagion: Let half a pound of oil of vitriol, diluted with an equal quantity of water, be gradually poured into a vessel, containing 4 ounces of pulverized manganese, mixed with a pound of sea-salt. The dish ought to be placed on a heated brick; and the operator should carefully avoid the fumes arising from the vitriolic acid; as they will powerfully affect the organs of respiration.—See also FUMIGATION, vol. ii. p. 346.

STAG, or *Cervus Elaphus*, L. an animal of chace, which is common in Britain, as well as in other parts of Europe, in the northern parts of Africa, Asia, and America. It is of a reddish-brown colour, with black spots on the face, and a dark stripe in the direction of the spine.

The stag is furnished with fine branching horns, which it generally sheds in the spring. The female produces one, and sometimes two *fawns*, towards the end of May, or early in June, after a gestation of 40 weeks. These animals attain the age of 35 or 40 years; are remarkable for their

quick eye, sagacious scent, and acute ear; and, as they listen with delight to the sounds of the shepherd's pipe, this instrument has been successfully employed by hunters, for the purpose of decoying them.

The flesh of fawns is sweet and tender; but, when the stag advances in years, it acquires a strong and disagreeable flavour. Their most useful parts are, the skin and horns; the former being advantageously manufactured into leather; while the latter are converted into handles for knives, or other instruments; and, on being distilled, they yield a volatile spirit, which is of considerable use in medicine.—See also HART'S HORNS.

STAGGERS, or *Apoplexy*, a disorder in the heads of horses, which becomes evident from the drowsiness; bad appetite; watery and inflamed eyes; and the staggering or reeling gait of the animals. The head is continually reclining on the manger; a slight fever prevails; and the discharge of urine is in a very small proportion.

If the disease arise from wounds, or blows on the head, the horse will, in addition to these symptoms, become frantic, particularly after feeding; and, if it fall down, without being able to rise, there will be little prospect of recovery.

Sometimes, the staggers proceed from colds, caught by too early turning the animal out to grass, after violent exertions: it will, therefore, be requisite to bleed him freely, and to support the head and shoulders with straw: if he survive the fit, clysters prepared from a strong decoction of scuna and salt, or the *purging clyster* (mentioned, vol. ii. p. 490), must be administered every morning and evening.

ing. It has farther been recommended, to blow a dram of the powder of *ASARABACCA*, once in the course of the day, into the animal's nostrils, in order to promote a discharge: after which, two or three aloetic purges (see *HORSE-MEDICINES*, vol. ij. p. 490) ought to be given; and, to prevent a relapse, small doses, not exceeding one ounce, and consisting of equal parts of cinnabar, antimony, and guaiacum, formed into balls, should be daily administered, for the space of a month.

When the staggers originate from fulness of blood, high feeding, or want of exercise, it is the practice of *farriers*, frequently to take small quantities of blood from the horse, and to give an opening diet, together with scalded bran or barley. It appears to us, however, that such bleedings, unless in cases of urgent necessity, might be avoided; by keeping the animal on hay mixed with double its quantity of cut straw, and making him work moderately every day.

STAGGERS, in *Sheep*, is a species of apoplexy, arising from too great fulness of blood. It principally attacks young lambs, which fall down; and, if not timely relieved, they speedily perish. The mode of cure generally adopted by shepherds, is to bleed the creatures frequently in the *eye-vein*, and to remove them to a coarse pasture, with a view to prevent the danger of a relapse.

STAINING. See **MARBLE**; and **WOOD**.

STAR OF BETHLEHEM, or *Ornithogalum*, L. a genus of plants, comprising 35 species, 7 of which are indigenous: the principal of these is the *luteum*, or Yellow Star of Bethlehem, growing in woods,

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and moist sandy places; where its beautiful yellow flowers appear in April.

All the species of this vegetable are hardy perennials, and prosper in any situation: they may be easily propagated by off-sets from the bulbous roots. These may be preserved for a long time, either in a raw or roasted state; and *RUELIIUS* remarks, that a wholesome and nutritious *bread* may be prepared from a mixture of the roots and seeds of this plant.—It is eaten by horses, goats, and sheep, though not relished by hogs; and is totally refused by cows.—See also *CHEESE*, vol. i. p. 502.

STAR-GRASS, or *Callitriche*, L. a genus of plants, consisting of four species, two of which are indigenous, namely: 1. The *verna*, Vernal Star-grass, Water-Starwort, Water-Fennel, or Star-headed Water-Chickweed, grows in ditches, ponds, and slow streams: it flowers from April to August. 2. The *autumnalis*, or Autumnal Star-grass, abounds in ditches and still waters, where it flowers in August.

Both these vegetables grow so thickly matted together, as to enable a person to walk over them, without sinking: hence, they may be advantageously planted, with a view to consolidate swampy, or marshy grounds, so as to prepare them for tillage.

STAR-WORT, the *SEA*, or *Aster Tripolium*, L. a native perennial, growing in salt-marshes, both on the sea-coast, and in those which are more distant from the shore: it flowers in the months of August and September. This vegetable is eaten by goats and horses; but is not relished by sheep, and totally refused by hogs. From its thriving

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in inland situations, the Sea-Starwort has been conjectured to indicate the presence of subterraneous salt-springs.

STARCH, or *Amylum*, is a preparation from wheat, obtained by steeping the flour of that grain in cold water, then straining it through a cloth, and suffering the farinaceous particles to subside. In many places, however, it is manufactured in the following manner :

Pure wheat is put into tubs of water, and exposed to the heat of the sun, to induce a proper degree of fermentation; the water being changed twice every day, for six or eight days, according to the warmth of the season. When properly softened and fermented, it is poured into canvas bags, which are worked or beaten on a board, placed over an empty vessel, in order to extract the mealy part. When such vessel is filled with the *liquid flour*, a reddish fluid appears on the surface, which must be carefully skimmed, and pure water added; when the whole ought to be briskly agitated, and allowed to subside. As the sediment increases, the water is gradually drained, and at length the starch is formed into cakes, which are cut in small pieces, and dried for use.

Good starch, when dry, is pulverulent, tasteless, without odour, insoluble both in cold water and ardent spirit: on the addition of boiling water, however, it forms **PASTE**, or **PASTRY**, of which the reader will find an account.—It is one of the constituent parts in all mealy or farinaceous seeds, fruits, roots, &c. of plants; though some vegetables contain a much larger proportion of it than others. Thus, the Wake-Robin, and White Bryony, afford more starch than pota-

toes; and the Salep-roots, especially those of the **Meadow-Orchis**, for the greatest part, consist of that valuable substance.

Starch being the basis of *hair-powder*, and also of extensive utility for domestic purposes, various experiments have been instituted, with a view to ascertain such vegetables as might be advantageously substituted for wheat.—As the reader will find a recapitulation of those useful plants which have been mentioned throughout this work, in the *General Index of Reference*, we shall, at present, only notice the method adopted by Mrs. GIBBS, for preparing starch from the roots of the Wake-Robin; for which the Society for the Encouragement of Arts, &c. in 1797, presented her with their gold medal. She observes, in her communication, that such roots are found in the Isle of Portland, in the common fields, whence they may be dug out, cleansed, and pounded in a stone mortar with water. The whole is then strained, and the starch settles at the bottom: a peck of these roots produced, upon an average, about four pounds of starch, which was sold at 11d. per pound.—See also **WAKE-ROBIN**.

Starch pays, on importation, 5l. 15s. 2½d. per cwt.; and is prohibited to be imported in packages, of less than 224lbs. net weight.

STARLING, the **COMMON**, or *Sturnus vulgaris*, L. an useful bird, inhabiting various parts of England. It is about eight inches in length, and weighs from 3 to 4 ounces: the plumage is black, spotted with blue, purple, or yellow, though sometimes with white dots; and the beak is yellow.

Starlings breed in hollow trees, the

the caves of houses, in ruins, and even on lofty cliffs; where they construct their nests of straw, the fibres of roots, and similar materials: the female lays from 4 to 7 pale-greenish, ash-coloured eggs: the young afford a delicate repast; but the flesh of the old birds is so uncommonly bitter, from devouring worms and insects, that it cannot be eaten. As, however, these creatures have a pleasing note, and display great docility, they are frequently taken by bird-lime or other means, and taught to imitate human speech, in the same manner as PARROTS.

The breeding of starlings, in a wild state, ought to be encouraged by every rational farmer; because they are of extensive service, by devouring noxious vermin, and eating no grain or seeds of plants, or other fruit, unless compelled by necessity.

STAVESACRE, or *Delphinium Staphisagria*, L. an exotic plant, growing in the southern parts of Europe, and particularly in Italy, whence its rough, blackish seeds are imported. They possess a disagreeable odour, and a nauseous, bitterish taste. Their chief use, at present, is, for destroying fleas and similar vermin; and if horses, or other animals, be occasionally washed with a decoction of the seeds of the stavesacre (in the proportion of one ounce to 1½ pint of water), all nits, &c. will be effectually exterminated.

These seeds were formerly celebrated for their purgative qualities; but, on account of their violent operation, are now exploded from the list of internal medicines. If, however, a small portion of such poison should have been accidentally swallowed, the most proper

antidote will be either an immediate and brisk emetic; or, if some time have elapsed, large draughts of oily, mucilaginous, milky, or other demulcent liquors, should be swallowed, with a view to prevent an inflammation of the intestines.

STAYS, an article of female dress, which is usually made of canvas or dimity, supported by whale-bone, and laced behind.

Few articles are of greater importance to the health and comfort of females than stays: hence, instead of being manufactured from hard substances, they ought to be made of such as would allow a free motion of the limbs; for instance, felt, shamois-leather, &c.; without any stiff materials. So great, however, is the prevalence of custom, that such absurd *casements* are still retained by the most numerous class of women, who lace themselves in whale-bone, to the great detriment of their constitution. To this cause we may justly attribute many of the cancers, hard tumors, and similar affections of the breast; nausea; indigestion; compression of the ribs; *distortion of the spine*; and a long train of painful disorders.—To prevent such frequent disasters, we recommend the use of corsets made of the pliant and elastic texture used for stockings, or gloves; which, if properly lined, and worn with a moderate compression, will not only afford sufficient warmth, but also contribute to the preservation of an erect form. In short, we find from history, that among the most elegant nations of antiquity, namely, the Greek and Roman women, never resorted to such cumbersome articles of dress.

In March, 1801, Mrs. LLOYD GRABOW, of Sackville-street, Piccadilly,

cadilly, obtained a patent for new-invented stays, for women and others. They consist of a back and front-piece, both of which are supported by strips of whale-bone, that are nearly parallel: the two pieces are joined by means of hooks and eyes, or similar contrivances, which meet at the side, and admit of being accommodated to the size of the wearer. Farther, these stays are made of such a length, as not to produce any inconvenience on sitting down; and are asserted to be principally calculated for correcting deformities, as well as for supporting the abdomen, where this aid should be required; as they may be lined and stuffed, or *padded*, at pleasure.

STEAM, denotes the visible, moist vapour ascending from hot or boiling liquors; and also from substances containing humidity, which is easily evaporated by a degree of heat, that is insufficient for their combustion.

Steam being one of the most powerful agents in Nature, is an object of great importance to manufactures, as well as to horticulture. Hence several machines, known under the names of *steam-engines*, have been invented, with a view to facilitate the operations of extensive iron-works, and also to expel noxious exhalations from mines. Among these contrivances, that by Mr. JAMES WATT, of Birmingham, first deserves honourable mention for its ingenuity; next in order of time, is Mr. JONATHAN HORNBLOWER's machine, for raising water or other liquids by means of fire and steam, for which a patent was granted in 1781; then Mr. JAMES SADLER's engine for diminishing the consumption of steam and fuel, as well as gaining

a considerable effect in time and force; in consequence of which, he obtained a patent in June, 1791; and lastly, the Rev. Mr. EDMUND CARTWRIGHT's improvements in constructing, working, and applying steam-engines; for which a patent was granted to him in November, 1797.—As, however, a description of these respective inventions would be unintelligible, without the aid of numerous engravings, the curious reader will consult the 4th, 7th, and 10th vols. of the *Repertory of Arts*, &c. where full specifications are inserted, and illustrated with plates.

Farther, steam may be made subservient to the purpose of promoting vegetation; by means of flues and other contrivances, conducted beneath hot-houses:—with this economical design, various successful experiments have been made under the inspection of the Earl of DERBY, and also by THOMAS WAKEFIELD, Esq. of Northwich. Our limits, however, being circumscribed, we cannot specify the machinery invented by Mr. W.; because such account would necessarily be deficient without an engraving. We shall therefore only remark, that during the last five years, the steam has been used in his vine-house, with the best success; the plants vegetating with uncommon luxuriance throughout the summer; and producing “the greatest abundance of large and well-flavoured fruit.”—Another advantage attending this *new* method of raising fruit is, that it prevents the depredations of the *red spider*: because, if a sufficient volume of steam be applied, that destructive insect never appears. For a more minute account of the numerous trials made with Mr. WAKEFIELD'S

FIELD's flues, the reader is referred to the 18th vol. of the *Transactions of the Society for the Encouragement of Arts, &c.*

Steam may, with equal advantage, be employed in domestic economy, and particularly in cooking. Thus, *steamed* potatoes are always more wholesome and nutritious, than such as are boiled in water; and Dr. DARWIN observes, that if the heat of the steam could be increased after it has left the water, the art of boiling all vegetables might be considerably improved; and thus the mucilage, abounding both in potatoes and flour-puddings, and also in the roots, seeds, stems, leaves and flower-cups of plants, may be rendered more nutritive, and, probably, more palatable.—See also the article *COOKING*.

STEEL, is iron refined in the fire with certain ingredients that render it white, and impart to it a harder and finer grain than that of the original metal.

Iron is converted into steel, either by *fusion*, or by *cementation*. The former method is employed for making steel immediately from the ore, or from the crude, cast metal. In the latter, bars of iron are placed in furnaces, with a stratum of charcoal between each; till the pile is raised to a sufficient height. The whole is then closely covered, to prevent the access of the air; when a strong fire is kindled, and uniformly continued during the whole process. The surface of the metal, manufactured in either way, generally exhibits numerous vesicles, whence it is called *blistered steel*; but these may be removed by repeated ignition between red-hot coals, and by forging.

The finest metal of this descrip-

tion, is the *Damascus-steel*, which is imported from Syria; but the process pursued in the Turkish manufactories, is not accurately known in Europe. The *German-steel* is made by breaking the *blistered* bars into small pieces, which are exposed to the strong fire of a furnace: these are next welded, and extended to the length of about 18 inches, when they are doubled; welded a second time; and at length drawn to the requisite size and shape. The celebrated *Brescian-steel* is obtained by *roasting* the iron-ore in strata, with layers of wood between each; and, when these are sufficiently smelted, the metal is taken out of the furnace, broken to pieces, picked, and washed in troughs of pure water. It is next conveyed to an oblong square cavity, termed the *fluxing-bed*, which is strewn with a mixture of finely-sifted ashes and sand, that are carefully compressed. A stratum of charcoal is then laid on; the smelted metal is gradually added; and, at the end of three or four days, the conversion is completed.

The best steel manufactured in Britain, is known under the name of *cast-steel*. It is prepared from the common blistered metal; which, being broken to pieces, is put into proper crucibles, with a *flux*; and, after the fusion is effected, the metal is cast into ingots, when it undergoes the operation of *tilting*, and is at length tempered, by repeated ignition and immersion in water.

In 1801, a Mr. EGGS obtained a patent for a new method of *bending* steel. After giving the necessary shape to the blade, spring, or other article, it is extended over a convex piece of iron, denominated a *flat*. The bent steel is next

stricken repeatedly with an iron machine, resembling a chissel, that cuts into the former, and completes the bending; by which practice he conceives, that considerable labour will be saved in the manufacturing of springs, trusses, and surgeons' instruments.

Rusty steel may be cleaned, by first anointing it with sweet-oil, which in the course of two or three days will soften the rust; afterwards wiping it dry with clean rags, and polishing the tarnished parts with PUMICE-STONE or EMERY, by means of hard wood: but the most effectual composition for giving a high degree of lustre to steel, is a paste made of levigated blood-stone and spirit of wine.

This useful article is subservient, chiefly to the manufactures of sword-blades, table and pen-knives, razors, and a variety of other utensils, employed in the arts, and by mechanics: its medicinal properties differing but little from those of iron, we refer the reader to vol. ii. p. 31.—*Steel* pays on importation, various duties, according to its respective quality:—thus, the *gad-steel* is subject to the charge of 2l. 9s. 8½d. per cwt.; the *long* and *wisp-steel* pay 13s. 11½d. per cwt.; and *steel-wire* is liable to the duty of 11d. per lb.

STEEL-YARD, or STILYARD, is one of the most ancient machines for ascertaining the weight of bodies, by its counterpoise. It is aluded to in the Pentateuch, and to this day used by the Arabs, and all the Asiatic nations. The Greek and Roman goldsmiths preferred it to the *balance*, which was the instrument used by the people.

The steel-yard consists of a lever of unequal arms; and, in its most

perfect form, is constructed on the principles of the usual balance; to which however it is greatly inferior, in point of minute accuracy. On the other hand, the *steel-yard* is more compendious and convenient; nor does it admit of those subtle frauds which may be, and often are, practised with a pair of scales.—See BALANCE.

There is another species of *portant steel-yard*, consisting of an elastic spring, which is confined in a tube; thus serving by its expansion, as a substitute for the long arm, and pointing out the weight of substances, by marks made on the moveable perpendicular bar in its centre. It would be superfluous to enter into a detailed description of these *portable* machines: let it therefore suffice to observe, that such contrivance is not sufficiently accurate to determine the difference of *ounces* or *drams*; though it may answer the purpose of weighing larger quantities; provided it be properly handled, and preserved from moisture, or *rust*.

STEWING. See vol. ii. p. 53.

STICKLEBACK, the COMMON, BANSTICKLE, or SHARPLING, *Gasterosteus aculeatus*, L. a well-known fish, abounding in newly-cut ditches, canals, and other collections of water. It seldom exceeds two or three inches in length: the back is covered with sharp spines; and, like its sides, is of an olive-green: the belly is perfectly white.

Numerous shoals of sticklebacks inhabit the fens of Lincolnshire, and the adjoining rivers, where experiments have been made to express oil from these diminutive creatures; but, we conceive, they may be more profitably employed as *manure*.—See vol. iii. p. 159.

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STILYARD. See STEEL-YARD.
STILTON-CHEESE. See vol. i:
 pp. 496-7.

STIMULANTS, in medicine, generally denote those substances, or means, by which the action of certain parts of the body is increased, for instance, the circulation of the blood, or the activity of the muscular fibres, so as to affect, in a more or less favourable manner, the whole system of the nerves. In short, these remedies are chiefly designed to raise the *vital power*, by producing such changes in the organized frame, as will render the latter more susceptible of those healthy impressions (by others termed *irritability*) on which the proper exercise of all the animal and vital functions principally depends. Hence, the greatest precaution is requisite, in the choice and adaptation of *stimulants* to the particular constitution and circumstances of the individual; so that the energy of the active principle of life may not, at the same time, be too much weakened; or, by a long continuance of such means, be totally exhausted.

It would be incompatible with our plan, to enter into a minute discussion of this important subject: we shall, therefore, content ourselves with observing that, in the application of stimulants, the principal attention ought to be directed to ascertain, by induction, from the existing degree of debility or nervous inactivity, whether any, and what portion of the vital principle in the patient, may occasionally be roused or excited into action:—the result of such inquiry, can be determined only by the experienced medical practitioner. The truth of this assertion, will be more evident

from the following list of stimulating remedies, any of which may, in certain cases, prove useful, if properly employed: thus wine, camphor, musk, castor, opium, phosphorous, marum germander, cinnamon, volatile alkali; nay, even friction, electricity, and the application of nettles—all have, in various instances, afforded relief, when directed with judgment.

For guiding those readers, who are in search of general information, we shall briefly state the principal cases, in which stimulants may be resorted to: 1. In ardent fevers attended with extreme nervous debility, especially those of the malignant kind, where the patient has neither strength to discharge the morbid miasma affecting him; nor to counteract the noxious influence of disease. 2. In all the chronic disorders arising from intestinal obstructions; acrid humours; long-continued depressing passions; want of sufficient nutriment; privation of fresh air; too great exertions of the mind, especially night-study; and debauches of every description. 3. In fainting-fits, or swoonings, where the highest degree of bodily weakness is only apparent, so that they originate from a suppression, rather than from the want of nervous energy. 4. In paralytic affections, produced by any of the causes before specified.—Hence, it will be easily understood, that the nature of *stimulants*, requires not only the knowledge of selecting, but also great circumspection in applying them to proper subjects.

STIRRUP, a semi-circular machine, manufactured of steel, plated iron, &c. serving to support the foot of the horseman; as it enables

ables him to mount, and to maintain a due equilibrium, while seated on the animal.

Without entering into an historical account of this contrivance, the utility of it is obvious. Hence, an ingenious artisan, Mr. KELLY, of the Strand, London, several years since, obtained a patent, which is now expired, for manufacturing stirrups, one side of which opens by means of a spring, if the rider should accidentally be thrown off his seat, or otherwise be entangled; in order to prevent dangerous injuries often arising in consequence of being dragged by the horse. We understand, however, from the patentee, that this invention is not so effectual in preventing danger, as his lately contrived stirrup-leathers, with a spring beneath the saddle: thus, if the horseman happen to fall off, both the stirrup and the leather will be immediately disengaged. As the price of the whole apparatus is not considerably raised by this useful addition to a *hunting-saddle*, we recommend it to the notice of our readers.

STOCK-BILL: See HERB-ROBERT.

STOCKINGS, are those garments which serve to clothe, or shelter, the legs and feet from cold, and moisture.

Stockings are manufactured of silk, cotton, thread, or worsted; being either knit with needles, or woven on a loom; but the most proper material is *wool*, which is doubtless a warmer, and more natural clothing for the human body, particularly during the winter, than that of any other texture. In all cases, however, they ought to be adapted to the size of the foot; because, if too short, they cannot

fail to occasion cramps, or other painful sensations; and, if too long, the folds thus arising, will produce blisters, and otherwise prove an impediment in walking.

Those, who have any regard for their health, ought to accommodate their stockings to the different seasons; wearing thick woollen hose during the winter, and changing these for a lighter kind, during warm weather.—As the feet constantly perspire, in consequence of the united friction both of the shoes and of the stockings, it will be advisable to make use of a clean pair of the latter, more than once in the day, or every time the feet are chilly and uncomfortable, both from motives of health and cleanliness. But silk stockings ought, on no account, to be worn *next the skin*; because they not only expose the person wearing them to frequent colds and catarrhs, but are also in other respects very unfavourable to health, especially in scorbutic habits.

In July, 1799, a patent was granted to Mr. JOHN EATON, for his invention of a piece of machinery to be added to a stocking-frame, for manufacturing *hose-pieces, gloves, &c.* in a more neat, simple, and expeditious manner, than can be effected by the common method. As, however, a mere description would convey an inadequate idea of Mr. EATON's contrivance, the curious reader is referred to the 11th vol. of the *Repertory of Arts, &c.* where a full specification is inserted, and exemplified by an engraving.

STOMACH is a membranous viscus, serving to receive and digest the various articles of food, conveyed through the mouth and gullet, for the nutrition of the body.

It

It is situated in the epigastric region (see ABDOMEN), towards the left side, in the form of a horizontal, long sack, furnished at each end with an orifice, namely, the upper or left, called the *cardia*, where this organ is connected with the gullet; and the inferior, or right opening, termed the *pylorus*, by which it is united to the intestines.

As the function of the stomach is of the first importance in the animal economy, it will be useful to give a concise view of the principal affections to which it is liable.

If foreign substances have, by accident, been swallowed, such as nails, stones, pieces of bones, coins, knives, &c. the proper remedies will be those of a fat or oily nature, namely, castor-oil, butter-milk, spermaceti, mucilages, &c. clysters of similar liquids; in order to sheath the internal membranes against injury; and, in consequence of which, indigestible bodies are generally evacuated with the feces, though sometimes not without pain; so that, in some instances, they have proved fatal. The farther treatment is stated, vol. ii. p. 413, and vol. iii. p. 196.

Of a more serious complexion, however, is an INFLAMMATION OF THE STOMACH, or *Gastritis*: the principal symptoms of this malady are, violent fever of the malignant kind; anxiety; intense heat and pain in the epigastric region; nausea and vomiting, attended with hiccough.

Causes:—Acrid substances, for instance, glass, corrosive sublimate, arsenic, &c. too large quantities of nitre; suppressed perspiration; repulsion of the gout, particularly in plethoric and bilious habits; violent passions; cold draughts when the body is heated; though it may also

arise from external injury sustained in other parts, such as the brain, &c.

This dangerous malady, generally, terminates between the fourth and eighth day. If the symptoms continue without intermission, and become more violent, a mortification may be apprehended: thus, sudden cessation of pain; low pulse, and great weakness, denote that gangrene has taken place; but, in less urgent cases, where no remarkable changes happen for several days, a more favourable event may be expected; though, when the affection proceeds from injuries in other parts, or the swallowing of poisons, it generally terminates in death.

Cure:—The chief remedy to be resorted to here, is immediate and copious bleeding, after which a blister ought to be applied to the pit of the stomach: great benefit has also been derived from emollient, and mildly opening clysters. The patient's beverage should be of a diluent, mucilaginous, or oily nature, and taken in small quantities; the latter will prove salutary, where the irritating substance has, for some time, remained in the stomach. If the disorder originated from corrosive poisons, the most proper means of decomposing them, and of counteracting their effects, will be timely and copious draughts of a solution of soap; or sulphureous waters; warm baths, and the subsequent use of mucilaginous liquids.—See vol. i. p. 110. After the cure has been successfully effected, the convalescent should be cautious in his diet, avoiding all coarse and heating food; he ought likewise carefully to keep his stomach and feet warm, especially in changeable weather.

Another species of *gastritis*, is the *erysi-*

erysipelatos, which occurs more frequently than is generally understood: the signs by which the existence of this affection may be ascertained, are as follow: the mouth and fauces appear inflamed; there is pain at the pit of the stomach, attended with frequent vomiting, and a slight fever. The disorder often changes its place, and sometimes spreads through the whole alimentary canal, where it occasions vomiting or diarrhoea. In most instances, it proceeds from acrid substances introduced into the stomach, and from internal causes, the nature of which has not been hitherto discovered; though it also frequently appears as a symptom of putrid fevers, and during convalescence in general.

Cure:—When this inflammatory complaint arises from acrid substances, it will be necessary to take copious draughts of warm, bland liquids, with a view to excite vomiting, by which it may be removed; or, if it proceed from mineral poisons, recourse should be had to the antidotes mentioned under their respective heads.—Bleeding, in this case, is neither advisable nor safe, especially if the patient be in a debilitated state: on the contrary, small quantities of vegetable acids, and the careful use of the Peruvian bark, will be productive of good effects.

With respect to the method of treating INDIGESTION, we refer the reader to that article.

STONE, or *Lithiasis*, is a concretion of calcareous matter, formed in different organs of the body, but particularly in the kidneys, urinary passage, and biliary ducts; though other parts are not exempt from its influence: thus, accumu-

lations of this kind have frequently been discovered, upon dissection, in the heart, brain, lungs, intestines, &c. of various size, shape, weight, and number. There are instances, where more than 200 small stones have been gradually voided by stool.

An inquiry into the nature of these morbid productions being foreign to our purpose, we shall briefly state, that they probably originate from a deposition of certain particles of the blood, which cohere to any small body they may find in their passage, thus forming the nucleus or basis. Hence we shall confine our attention to the practical treatment of this dreadful malady, in the instances before mentioned; and commence with the *urinary stones*, as being the most frequent. These are situated either in the kidneys, urinary ducts, bladder, or urethra.

Symptoms of the stone in the kidneys:—An obtuse pain about the loins; nausea and vomiting; small pieces of calcareous matter are discharged with the urine; but, if the concretion be settled in the bladder, an uneasiness will be felt at the end of the urinary passage, especially in emitting the water, which suddenly stops; or, it can be passed only when lying on the back: the urine is of various colours, and often tinged with blood; and, if the accumulation be of a considerable size, a fixed pain prevails about the neck of the bladder. More certain signs, however, for ascertaining the presence of a stone, are the following: 1. when the *discharge* of urine is accompanied with small pieces of such stony matter; and, 2. by *sounding*, which is performed, either by the

introduction of the finger into the anus, or of the catheter into the bladder.

Causes:—This distressing affliction may be induced by a great variety of circumstances, especially by improper articles of diet (see GRAVEL); though, in some countries, it is endemial, where a peculiar disposition in the habits of the people promotes its formation. These painful concretions have, likewise, been observed to be very common in the countries provided only with hard spring waters, which constitute the daily beverage of the inhabitants: they may also arise from too copious use of acids, and certain wines, for instance, Moselle and Rhenish, or Old Hock; not less than from cheese, and other gross aliment. Farther, well-attested instances have occurred, in which this excruciating disorder was occasioned by the shot swallowed with game, and even by the dust from mill-stones, mixed with the flour.

During the passage of stones from the kidneys into the bladder, the patient is afflicted with pain, vomiting, &c. which form the *paroxysm of the gravel and stone*; being sometimes even attended with inflammation (see KIDNEYS). In the bladder, they are mostly productive of pain; strangury; bloody urine; inflammation; though in some instances they have remained in a dormant state for a considerable time; and, unless removed by proper means, death closes the scene.

Cure:—An endless variety of remedies, under the name of *lithontriptics*, have been recommended, for dissolving the stone; but as an account of all these pretended specifics would be equally

tedious and useless, we shall only mention such as appear best adapted to the purpose. A preparation, which formerly stood in great repute, is the *caustic ley*, which, however, requires mucilaginous or gelatinous drink as a vehicle: thus, it was administered with great secrecy by an empiric of the name of CHITTICK, to whom the patients sent a vessel containing veal-broth, which he returned with the medicine mixed in the liquor, and secured by a lock: for this exposition we are indebted to Mr. BLACKBIE. It is evident, that great caution is requisite in the dose of so active a medicine. Considerable benefit has been derived from the use of water impregnated with fixed air, as directed by Dr. FALCONER.—An infusion of the seeds of wild carrot (*Daucus sylvestris*, L.) sweetened with honey, is a simple and much esteemed remedy.—The late Dr. DE HARN, recommended the Bear-whortleberry (*Arbutus Uva ursi*, L.) as a most efficacious remedy for the stone: it may be taken in doses of from one scruple to half a dram in powder, twice or three times a day; or, in the form of an infusion thus prepared: Take of bear-whortleberry leaves three drams, and boiling water one pint: after simmering for one or two hours, the liquor should be strained; and from two to three table-spoonfuls may be given twice or three times a day.—Lime-water has likewise proved beneficial in this complaint, both when taken internally, and injected into the bladder.—Another simple remedy has been prescribed with great success by Dr. MACBRIDE: thirty berries of raw coffee ought to be boiled in a quart of pure water, till it acquire a deep

deep greenish colour; of this liquor about half a pint is to be taken, morning and evening, with 10 drops of sweet spirit of nitre: during such course, the bowels should be occasionally opened, by a dose of castor-oil. Similar attention ought to be paid, when any of the other remedies are administered; and their operation may also be assisted by the use of mild diuretics. In their diet, patients should avoid coarse and heavy provisions, such as salted, dried, or smoked animal food, especially substances of an oily nature, and all high-seasoned dishes: farther, red-port, Rhenish, and Moselle wines, are uncommonly pernicious; as they naturally promote the accumulation of stones: the beverage ought, therefore, to consist of cooling diluents, in which some mucilage of gum arabic or tragacanth is dissolved.—Symptoms of violent pain may be relieved by emollient clysters with opium.

Should, however, all endeavours of dissolving the stony concretion prove abortive, recourse must be had to an operation, as the only eventual means of extirpating the disease. If the stone should be retained in the urinary passage, speedy application must be made to a professional man; because delay, or neglect, cannot fail to increase the evil.

GALL-STONES, or concretions formed in the biliary ducts, are of various size and colour. There is a fullness and pain about the stomach; loss of appetite; languor; nausea; colic; vomiting; and restlessness: the eyes have a yellowish appearance; and jaundice is a frequent attendant on the disorder.

With a view to expel such biliary concretions, the patient may

first resort to a warm bath, and then take a gentle emetic; though, in plethoric habits, or if the pain be violent, a small portion of blood may be drawn from the arm, and an opiate given; in order to allay the spasms. But, where the symptoms do not abate after the second bathing and emetic, medical advice will be indispensable.—In slight cases, a decoction of the Soap-wort, or of Dandelion and Dog's-grass, in which a few drams of *vitriolated kali* are dissolved, has been found of effectual service. Great benefit has, likewise, been derived from the liberal use of *acetated kali*, especially if administered at an early period. BRUGNATELLI, has for some time employed with great success, the *acidulated carbonate of lime*.

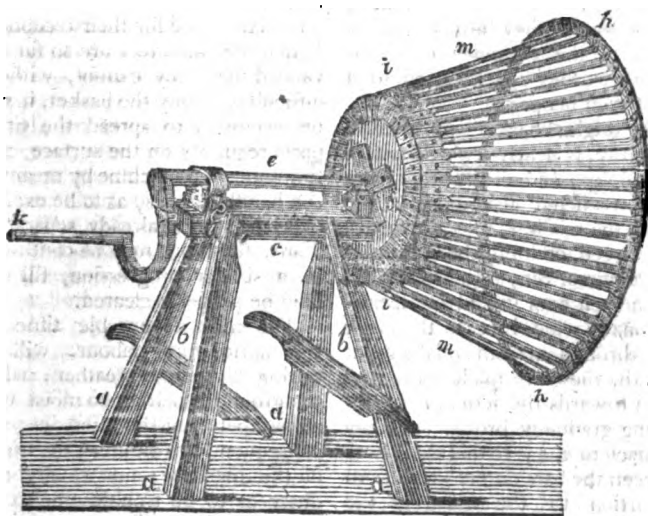
In all calculous affections, the body should be regulated by the mildest laxatives, the good effects of which may be still farther promoted by moderate exercise on horse-back; though the same caution ought to be observed in this respect, as well as in the use of emetics; for every violent effort, or concussion of the viscera, tends to aggravate the complaint.

STONES, in general, are defined to be hard, solid bodies, which are neither soluble in water, nor malleable. They are formed in the progress of time, within the bowels of the earth, by the gradual accretion of earthy particles; which, by different combinations, acquire various degrees of hardness.

Stones have, by mineralogists, been divided into numerous classes, according to their respective consistence, colour, form, and other properties: but, as we state the most valuable kinds and species of these

these fossils, in alphabetical order, we shall in this place only remark, that the practice of indiscriminately collecting stones from land, is productive of great disadvantage, because it tends to diminish its fertility. (See also vol. i. p. 95.) There are, however, certain situations abounding with stones, that might be usefully employed in repairing roads :—the usual mode of gathering them by hand, or sepa-

rating them from the soil by means of an iron or wooden riddle, being equally troublesome and expensive, we have procured the following cut, of a machine for clearing land from stones, and also for sifting sand or gravel: it was invented by PETER FRANCIS PONTI, an ingenious Italian mechanic, on whom the Patriotic Society of Milan conferred a premium of 16 scudi, and a silver medal.



a, a, a, a, are four wooden feet, serving to support a beam, *c*, to the ends of which are fixed two pieces of wood, *d*, and *g*, containing the iron axis *e*.

A hoop of iron is fastened over such axis, by means of a hook, *l*, to prevent it from being raised up by the weight of the receiver or basket, marked by the letters *i, m, h*;

b, b, are two cross pieces, fixed to the inner surface of the feet; and which contribute to strengthen the

machine, and to keep it steady. They are made to project in the form of handles, for the greater convenience of transporting the implement to different places, two men being thus enabled to carry it with ease.

k, is a continuation of the iron axis, *e*, so as to form the handle of the basket; and, on turning it round, the basket moves in a circular direction: the axis is fixed to the bottom of the receiver by a cross of iron, *f*, or, such axis may

be

be made to pass through the basket, and be so firmly attached to its inner surface, as to support its rotary motion.

The receiver described by the letters *i, m, h*; *i, m, h*; consists of a thick wooden bottom, to which are fastened (by means of nails represented by black dots) the iron bars, of which all its sides are composed. These bars extend in an oblique direction to the bottom; so that the diameter of the outer periphery, *h, h*, is double to that of the bottom: they are equal in length to the diameter *h, h*; at which part they are fastened to a strong iron hoop.

The original basket delineated in our figure, is nearly two Paris feet in diameter; and all the other parts are constructed accordingly: the size of the machine may, however, be enlarged, or diminished, as occasion requires. But, as the spaces between such bars would be disproportionately wide, in case the latter were throughout of an equal size, or breadth, these are made somewhat round towards the letters *i, i*; becoming gradually broader as they approach to *h, h*; so that the spaces between the bars do not increase in proportion to the width of the basket.

Lastly, in case such bars be not sufficiently strong, they may be supported by fixing another iron hoop round them, at *m m*. And, if this machine be designed to sift sand or gravel, as well as to clear land from stones, a sieve of iron wire may be fastened around it; and the interstices of which may be enlarged or diminished, according to circumstances.

In employing this machine, it must be placed at one end of the field: two men, furnished with

spades, should place themselves in the front, and throw the earth dug up into the basket, which may be turned round by a boy, or any other person. The soil and stones strike against the wooden bottom, and fall upon the bars, being whirled round by the rotary motion of the receiver. During such revolution, the sand, small stones, and earth, fall through the interstices of the bars on the ground, while such as are larger will be thrown to a certain distance from the basket into a trench, made for their reception. When the labourers are so far advanced that they cannot, without difficulty, supply the basket, it will be necessary to spread the sifted parts regularly on the surface, and to remove the machine by means of the handles *b, b*, so as to be exactly over the stones already separated. Thus, the work may be continued in a similar progression, till the land be properly cleared.

The most favourable time for this agricultural labour, will be during temperate weather; when the ground is neither so moist as to adhere between the interstices, and consequently to diminish the utility of the machine; nor so dry and dusty as to be troublesome to the labourers. In such seasons, stony land may be greatly improved; as the stones will be buried in those spots to which the roots of annual plants do not extend; and in which neither trees nor shrubs will prosper.

STONE-CROP, or *Sedum*, L. a genus of perennial plants, comprising 21 species, 9 being indigenous; of which the following are the most remarkable:

1. The *Telephium*, or Orpine Stone-crop. See ORPINE, the Common.

2. The

2. The *acre*, WALL-PEPPER, BITING, or PEPPER STONE-CROP, grows on the surface of walls, roofs, rocks, and in dry pastures; flowers in June or July. This vegetable is eaten by goats, but refused by horses, cows, and sheep. It continues to vegetate, while suspended in a chamber: being very acrid, if applied externally, it excites blisters; but, when taken internally, occasions vomiting.—According to Dr. WITHERING, it is an excellent remedy in scorbutic cases, and in quartan agues: a table spoonful of its expressed juice operates powerfully as a purgative. At present, however, it is seldom employed; though, on account of its active properties, the wall-pepper promises to be an useful medicine, when administered with judgment.

3. The *reflexum*, or YELLOW STONE-CROP, thrives on walls, roofs, and rocks, where its bright yellow flowers appear in July.

4. The *rupestre*, or ROCK STONE-CROP, grows principally on St. Vincent's rock, near Bristol, and on the Cheddar hills, in Somersetshire. It differs from the preceding species only in its smaller flowers, which likewise blow in July.

Both vegetables, last mentioned, having an agreeable, pungent taste, are cultivated in Holland and Germany, where they are esteemed as ingredients in salads. They may be easily propagated, by planting either their roots, or the cuttings of the shoots in a moist soil, where they will readily take root, and spread with great luxuriance.

STORAX, a fragrant gum-resin, exuding from incisions made in the Common Storax-tree, or *Styrax officinalis*, L., a native of Italy and the Levant, where it flowers in July.

The best storax is obtained from Asiatic Turkey, in small, irregular, transparent masses, of a pale-red, or yellowish colour, and generally, abounds with whitish tears, resembling those of BENZOIN. The drug, however, which is commonly sold in the shops, consists of large, light pieces, very impure, from the saw-dust with which the resinous juice is mixed. And, though inferior to the preceding sort, yet in a purified state, it possesses greater fragrance.

Storax is one of the most grateful of the odoriferous gum-resins, but is at present disused in medicine; and employed chiefly in fumigations, or as a perfume: it pays, on importation, from the countries of which the storax-tree is a native, only 9½d., but from other places, 2s. 5½d. per lb.

There is another species, known under the name of *Liquid Storax*, which exudes from incisions made in the *Liquid-ambar Styraciflua*, L., asserted to be a native of Virginia and Mexico. It is farther obtained, by boiling the bark or branches of that tree; in consequence of which the purer particles rise to the surface. The *genuine liquid storax* is of the consistence of honey, possesses a fragrant smell, somewhat resembling that of the preceding, solid species. But the drug of this name kept in the shops, is an artificial compound of the concrete storax, common resin, wine, and oil, properly incorporated. Whether genuine or spurious, it is only used externally as a balsamic. The *imported liquid storax* pays a duty of 4½d. per lb.

STOVE, in domestic economy, a contrivance, or apparatus, in which fires are made, with the view of conveying heat throughout houses,

houses, churches, or other buildings.

One of the most ingenious plans designed in this department, is the *Pennsylvania Fire-place*, which we have described in vol. ii. pp. 289-92. Notwithstanding its acknowledged utility, the mechanism of Dr. FRANKLIN's apparatus has occasionally been found too complex to be comprehended by ordinary workmen: hence, a Mr. SHARP procured a patent, several years since, for certain improvements, which are calculated to obviate such inconveniences. Thus, by adding a funnel to the top, these fire-places can be adapted to any chimnies; and, if the funnel be lengthened, it may be accommodated to libraries, ball-rooms, or other buildings, which have not the advantage of a chimney. Mr. S.'s stove-grates are provided with a hollow base; in consequence of which, he is enabled to apply them, without any additional brick-work, more effectually to the purpose of heating rooms, than is practicable with those on FRANKLIN's construction: at the same time, by his alterations in the *air-box* (see vol. ii. p. 290), a larger portion of air is introduced. Our limits permit us only to add, that Mr. SHARP's stove-grates may be accommodated to every building, whether public or private: and we refer the reader to his "*Account of the Air-Stove-Grates*," &c. 8vo.

In June, 1796, a patent was granted to Mr. WILLIAM WHITTINGTON, for his invention of a *Portable Baking Stove*. The patentee asserts, that his contrivance is calculated for baking all kinds of bread, particularly that prepared of oats, with a cheapness and facility not hitherto experienced. It

may be manufactured from any metal, or even from clay, of any size or shape; and either with or without an oven: the door for supplying fuel, together with the pipe or flue for carrying off the smoke, may be fixed in any part of the stove. Besides, this machine may be used in any situation, whether on land or at sea; being easily portable, and requiring only *one-fifth* part of the fuel consumed in the common way; as it may be easily heated with coke, coals, wood, charcoal, or any other substance. For a more diffuse account of such contrivance, the reader will consult the 12th vol. of the *Repertory of Arts*, &c. where it is illustrated with an engraving.

A patent was likewise granted to Mr. EDWARD WALKER, for a portable Stove or Kitchen; to facilitate the processes of cooking, or dressing provisions. The whole is manufactured of either cast or wrought iron; having a fire-place in its centre, which is inclosed by a door: beneath is an ash-hole; and, on each side, there is a closet, one of which may be employed for baking; the other will contain two spits, with racks, &c. complete; the top may be used as a *broiling-plate*, heated by the same fire; while the smoke is carried off through an iron funnel, having a smoke-jack for the purpose of turning the spits. A more complete idea of this stove may be obtained from the 15th vol. of the *Repertory*, &c. where the specification is illustrated with an engraving.—See also the articles FIRE-PLACE, FURNACE, GRATES, and KITCHEN.

STOVES, in *Horticulture*, are buildings erected for the purpose of preserving tender plants, which would

would otherwise perish, from the moisture and coldness of our climate.

These erections are usually divided into two classes, namely, *bark* and *dry-stoves*, according to the plan on which they are established. In the former case, a pit is dug to the depth of three or four feet, that generally extends over the whole length of the hot-house, and is filled with fresh tanners' bark, in which the pots, containing the plants, are plunged.—See HOT-HOUSE.

Dry-stoves are built of bricks, in the form of flues, which are conveyed either beneath the pavement, or attached to the back wall of the house; one being constructed above another, and returned six or eight times throughout the whole length of the building. In such stoves, it is necessary to arrange the pots on shelves, rising progressively. Their dimensions ought to be adapted to the number of plants to be preserved; the floor being elevated to a greater or smaller height above the surface of the ground, according to the natural humidity or dryness of the soil. It will be necessary to make paths about two feet wide in the front, for the convenience of walking. The furnace may be placed either in the middle, or at one end of the building; but it should, in every case, be adapted to the nature of the fuel to be employed. The best for this purpose is *turf*; because it burns more uniformly, and slowly, than any other combustible substance, and consequently requires less attendance.

Such is the manner in which these kinds of stoves are generally constructed; but Dr. ANDERSON has lately contrived another ap-

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paratus, upon a *new* plan, and accommodated to his *Patent Hot-houses* (see vol. ii. pp. 495-6): as, however, a mere description of his peculiar stove would convey an imperfect idea of the invention, we are obliged to refer the curious reader, as well as the lover of horticulture, to the first volume of the new series of Dr. A.'s *Recreations in Agriculture*, &c. where the principle is fully developed, and illustrated with several cuts.

STRAINS, in farriery, denote such accidental injuries as sometimes happen to horses, by a violent and unnatural distension or stretching of their muscles or tendons; in consequence of which, the animals suffer great pain, and are generally lamed.

The treatment of this affection must be regulated according to the situation of the injured parts. Thus, if the *ligaments*, that connect the thigh, or other bones, be *strained*, it will be advisable to turn the horse into a good pasture; as the richness of the food will prevent his health from becoming impaired; and the gentle exercise in the field will preserve the joints from stiffness and rigidity.

Where the *shoulder* has thus been hurt, the horse will not put the strained leg forward in the same manner as that which is sound; and, in trotting, describes a circle with the former, instead of a straight line: the lame leg likewise projects beyond the other. If such strain be accompanied with inflammation, bleeding will become necessary; after which the part affected must be well bathed three times every day with hot vinegar, or verjuice in which soap has been dissolved. But, in case no swelling appear, the animal

L

ought

ought to rest for two or three days, and the muscles should be rubbed with opodeldoc, or with a mixture of camphorated spirit of wine; and oil of turpentine, in the proportion of two parts of the former to one of the latter.

Poultices, consisting of oatmeal, rye-flour, or bran boiled in vinegar or wine- lees, together with a sufficient portion of hog's-lard, to render them soft, will be of great service, if timely applied; and, when the inflammation subsides, the strained parts may be bathed with either of the liniments before specified, till the perfect use of the limb be restored.

The *pasterns*, and *knees*, are liable to strains, chiefly in consequence of blows, or similar ill usage: if they be much swelled, a poultice may be applied, and the parts treated in the same manner as the *shoulder*; or, they may be bathed with a liquor compounded of one pint of vinegar, four ounces of camphorated spirit of wine, and two drams of white vitriol, previously dissolved in a little water. As these parts are generally subject to great weakness, after violent strains, the horse should be sent to a level pasture, which will greatly promote his recovery.

The last case deserving notice, is that of *strains* in the *hock*. These must be bathed in cooling and corroborant liquids; but, if the ligaments be injured, it will be proper to foment them with woollen cloths, dipped in a hot mixture of verjuice and spirit of wine, to which a small quantity of crude gal ammoniac may be added.—Lastly, if any internal callosities remain, it will be advisable to *fire* the joint carefully with *raxes*, or lines set closely together; after

which, a mercurial plaster should be applied; but, in case such concretions appear externally, they may be removed by the repeated use of the blistering plaster, the composition of which has been specified under the article *BONE-SPAVIN*; omitting, however, the sublimate, on account of its corrosive nature.

STRANGLES, a disorder incident to colts and young horses: it becomes evident from a collection of impure humours, that are discharged by the nostrils, or by supuration from the glands, situated beneath the bones of the lower jaw.

The symptoms, indicating this disease, are, loss of appetite, dullness, and inactivity; a hollow, dry, cough; and, progressively, intense thirst: as its virulence increases, the animal becomes languid; and, in consequence of the painful tumors formed in the jaw-bone, will at length be unable to swallow. The first object of attention, in case the fever continue moderate, and the evacuations be regularly performed, is to examine the swelling, and promote suppuration; which may be effected by cutting off all the hair contiguous to the tumefied part, and fomenting it for ten minutes with flannels, dipped in strong and hot decoctions of marsh-mallow, chamomile, or similar emollient vegetables. The following poultice must then be applied, namely: take coarse bread crumbs; barley meal; and elder-flowers, of each two handfuls; boil them in a sufficient portion of milk; and, while the mixture is hot, add three oz. of turpentine, and six oz. of hog's-lard. The quantity thus prepared will be sufficient for two or three poultices, which ought to be used moderately warm, and be firmly

firmly secured, every night and morning, after repeating the fomentation for five or six days; or till a suppuration be effected. When the discharge ceases, the following ointment, spread on tow, should be applied to the wound, and the poultice laid over it, to promote the healing of the ulcerated part:

—Take of resin, and Burgundy pitch, six oz. each; of hog's-lard, 4 oz.; of honey and common turpentine, two oz. each; and one oz. of yellow wax. These ingredients must be melted together: on removing the mixture, two drams of finely pulverized verdigrease must be gradually incorporated, and the whole frequently stirred, till it become cool.

Should the horse, during the strangles, be seized with considerable fever and inflammation, or the swelling be so situated as to threaten suffocation, it will be advisable to bleed him moderately. The food, throughout the course of the disease, ought to consist of warm mashes, given frequently in small quantities; to which half an ounce of liquorice and aniseed, in powder, may be advantageously added, together with about two ounces of honey. The diseased animal must be kept warm; and, if the weather be favourable, he should take gentle exercise, or undergo the usual discipline of the stable, though in a less compulsory degree.

This malady is seldom productive of dangerous consequences, unless it be neglected. As it mostly terminates with a discharge from the nostrils, these parts should be often cleansed with sponges, dipped in warm water; but, if such evacuation continue to be copious and fetid, after the swellings have suppurated and healed, it may

be considered as symptomatic of the GLANDERS; in which case it will be advisable to adopt the treatment already stated under that article.

STRANGURY. See URINE.

STRAW, denotes the stalk on which corn grows, and from which it is separated by threshing.

Straw is an article of extensive utility in rural and domestic economy. — When chopped or cut small, by means of the machine known under the name of STRAW-CUTTER (to which we refer), it affords a wholesome provender for horses and oxen, especially if it be mixed with green food. It is likewise usefully employed in thatching cottages, houses, and barns. But, as such buildings are liable to be uncovered by violent storms, farmers should, if possible, annually save a sufficient quantity of wheat-straw, in order to be provided against accidents: thus, the necessity of purchasing straw at a high price, or of threshing their wheat at an improper season, may be effectually obviated.

In May, 1798, Mr. PETER BOILEAU, obtained a patent for a new and improved method of manufacturing straw into hats, bonnets, &c. but such privilege having been annulled by a Court of Justice, we shall state the plan on which he proceeds.—The straw is first separated at the joint, and deprived of its external skin or covering; one end of each tube being cut in the form of a pen, so that it may be inserted into the cavity of another; after which it is immersed in water, to render it pliant, and susceptible of the requisite shape on the block. Next, a small circle is to be traced on the surface of a wooden mould (having the form of the crown correspond-

L 2

ponding

ponding with the article to be manufactured); from which, lines are to be drawn perpendicularly, diagonally, or in any other direction. At the top of each line must be fixed a nail or pin, to which a double wire should be fastened: the straw is then plaited between such wires, and the ends are joined by introducing the sharp end of one tube into another, till the crown be completed.

For making the brim of the bonnet or hat, a sheet of thick paste-board must be formed into the requisite shape; lines or curves, similar to those above described, are next to be drawn, and the wires fastened through small holes made at the top. The straw is worked in the same manner as that for the crown; to which the brim may be attached, either by continuing the work so as to form one piece, or by sowing both together, and concealing the juncture by a wreath of straw, or any other mode, which fancy may suggest.—See also PAPER, vol. iii. p. 337.

STRAWBERRY, or *Fragaria*, a genus of plants, comprehending three species, two of which are indigenous; but the principal is the *vesca*, or Common Strawberry, growing in woods, hedges, and hollow ways; where its flowers appear in the month of May or June; and are succeeded by small red fruit. The plant is eaten by sheep and goats, but is not relished by cows; and is totally refused by horses and swine.

The common Strawberry is the parent-stock from which all the different varieties have been obtained by culture: the most remarkable of these, are:

1. The *Wood-Strawberry*, with oblong serrated leaves, and small

white, round fruit.—2. The *Green*, or Pine-apple Strawberry, which has received this name from its delicate flavour, resembling that of the PINE-APPLE.—3. The *Scarlet*, or *Virginian* Strawberry, which has also oval, serrated leaves, and bears a roundish berry, of a deep scarlet colour.—4. The *Hautboy*, or *Musk* Strawberry, is a native of America, but has long been raised in British gardens: it is remarkable for its rough spear-shaped leaves, and its large pale-red fruit.—5. The *Chili* Strawberry has oval, thick hairy leaves, large flowers, and firm berries.—6. The *Alpine* Strawberry, has small oval leaves, diminutive flowers, and oblong, pointed fruit, of a moderate size.—7. The *Monthly*, or Ever-flowering Strawberry, originally a French variety, produces very delicate fruit, generally pointed towards the top, and bulky below; being in season from May to November: the plant itself, however, is very small, has diminutive leaves, and furnishes but few off-sets for transplantation.

All the varieties of this vegetable are hardy, perennial plants, which flower in May and June, producing perfect fruit in June, July, August, and even till November. They may be propagated by planting off-sets, or suckers, in any light, rich garden-soil, where they annually yield abundant crops, if properly weeded, and supplied with moisture. Their fertility, however, will be considerably increased, by transplanting them every second year into fresh beds, that have previously been dug, or otherwise prepared for their reception.

As the Strawberry is one of the most *exhausting* plants, and requires ample nourishment, all weeds growing in its vicinity should be carefully

carefully removed. Hence it will be found, that the earth in which an old stock has grown, undisturbed for several years, on digging up its roots, in a manner resembles wood-ashes; because it is deprived of all the soluble parts.

Without entering into a minute account of the culture of this useful plant, we shall briefly remark, 1. That the most proper season for transplanting strawberries, is in the month of August; when they will have sufficient time to take root before the winter: 2. That it is not advisable either to clip or break off the superfluous shoots, but to wind them around the principal stem, and secure the ends between the stalks; by which simple method, the plant will be supported in an erect situation, and the fruit be preserved from the ravages of vermin, as well as from being soiled on the ground: 3. To promote the growth of the berries, the contiguous earth around the stocks ought to be covered in the spring with tanners' waste; or, where this cannot be easily procured, with oyster-shells: thus, all weeds will be effectually suppressed, and an uniform beneficial moisture may be ensured. Lastly, when the first rudiments of the fruit appear, the soil ought to be carefully stirred by the hoe, and then manured with the following composition, that will remarkably contribute to its fertility. Take three parts of old rotten dung, one part of soot, and a similar portion of dry soap-boilers' ashes; mix them thoroughly, and spread this compost loosely by the hand, so that the newly-moved ground may be superficially covered.

There is another, and more ad-

vantageous, method of propagating strawberries by the seed: it was originally recommended by DU HAMEL, and has been carried to great perfection by DU CHESNE. The seeds, consisting of small oblong, dark red-brown grains, should be collected from the surface of the most perfect, ripe berries, which have almost become dry on the stalk; and be preserved till the succeeding spring; when they ought to be uniformly mixed with a little dry mould, and sown in a loose, rich garden soil, which is properly worked, and levelled with the rake. Next, it will be useful to sift finely pulverized earth, or rotten dung, over the beds, to the thickness of half-a-crown piece only, and to cover the whole with branches or boughs of fir-trees. In the course of three weeks, the young plants will appear, when the covering ought to be removed, and the branches set upright along the borders of the beds; in order to shelter the tender sprouts from the influence of the meridian sun. Others sow the strawberry-seed in August, and protect the young germs with mats suspended over the beds, by means of poles. The plants, thus raised, ought to be carefully weeded and watered: those reared in the spring, may be transplanted in the autumn of the same year; but, when sown in the latter season, they must remain in the seed-bed till the following summer. This mode of cultivating strawberries possesses many advantages over the usual practice; thus, it will be easy to obtain the most delicate foreign sorts, of which it would otherwise be difficult to procure off-sets; nay, by sowing the seed of degenerated sorts, together

gether with those of superior fruit, many new and excellent varieties will result from such combination.

Du CHESNE has made the following curious experiments, on the propagation of strawberries from their seeds: He directed the water in which this fruit had been washed, before it was used at table, to be thrown in a shaded corner of his garden, where the soil had been manured with rotten branches and leaves: in this manner, he obtained very beautiful plants for an extensive piece of ground. On covering the beds, over which such seed had been scattered, with connected pieces of the moss growing on trees, and removing the latter, when the plants had acquired 2 or 3 leaves, he obtained excellent crops. In March, 1764, strawberry-seeds were scattered on patches of moss (*Gateaux de mousse*), in pots placed under the windows of a hot-bed: these afforded the most vigorous plants. For such purpose, he principally employed the *Hypnum triquetrum*, or Triangular Feather-moss, which grows on damp meadows, fields, and hedges: it should, however, be remarked, that Du CHESNE, in all his experiments, found it necessary to moisten the earth, or moss, several times every day, till the plants appeared above ground.

Lastly, M. MALLET has likewise (*Bibliothèque Physico-Economique*, for 1798) strongly supported this method of propagating strawberries from the seed; and he observes, that they should be covered with straw, or light branches of trees, and regularly watered two or three times in 24 hours, to ensure a plentiful crop: the covering ought to be removed only

after the plants have acquired the *fourth* leaf; and the irrigation should be continued till the latter end of June. He concludes with remarking, that strawberries thus raised, are extremely productive; and, if planted on beds *five feet* wide, are greatly superior to those produced from off-sets, or suckers.

In situations, however, where early strawberries are an object of attention, Dr. ANDERSON directs them to be planted in pots, which may be arranged in flat pans made of milled iron; and these again placed on a wooden frame, sufficiently strong to support their weight. From each corner of such frame, a rope is to be passed upwards, over a pulley fixed to the rafters of a HOT-HOUSE, constructed according to his plan, whence the rope may be drawn horizontally to other pulleys fixed in a similar manner, and be carried from these over a cylinder turning upon an axis; so that the whole of the frame, together with the pots and pans, may be elevated, or lowered, at pleasure. Thus, the pots may be raised, till they are brought closely under the glass of the ceiling; which, being the warmest part of the building, will cause the plants to vegetate with the greatest luxuriance. He farther observes, that the pots may be supplied with water, by pouring it into the pans, without lowering them; and, as the berries gradually ripen, they may be gathered, and the frames again suspended.

Strawberries are a wholesome, delicious fruit; and may be eaten alone, with sugar, or with milk, but most agreeably with wine: they have a pleasant sub-acid taste; abound with juice; and possess a fragrant smell. Being of a cooling

ing and laxative nature, they may be considered as medicinal; and LINNÆUS observes that, by his own experience, a copious use of this fruit has proved a certain preventive of the STONE in the Kidneys. HOFFMAN states, that consumptive patients have been completely cured by a liberal allowance of these berries. Farther, they promote perspiration; impart their peculiar fragrance, together with a violet colour, to the urine; and dissolve tartarous concretions on the teeth. In domestic economy, a palatable jam, wine, and vinegar, are prepared from this fruit.

An infusion of the strawberry-leaves, while young and tender, makes excellent tea; but, for such purpose, they ought to be dried in the shade: being slightly bitterish and styptic, they have been used with advantage in laxity and debility of the intestines; in immoderate secretions, or suppressions of the natural evacuations, as likewise in hemorrhages and other fluxes. Lastly, they are of considerable service as aperients, in suppressions of urine; visceral obstructions; the jaundice, and many other complaints.

STRAWBERRY-TREE, or *Arbutus*, L. a genus of shrubs, consisting of nine species, three of which are indigenous: namely,

1. The *Unedo*, or COMMON STRAWBERRY-TREE, which grows on barren lime-stone rocks, particularly in the western parts of Ireland, where it flowers in September. This species is a principal ornament of our shrubberies, on account of its beautiful foliage, and its fine yellow flowers in autumn, which produce berries in the succeeding year, so that blossoms and fruit appear at the same time: the

latter, however, is not grateful to the taste, even though mellowed by frost. Nevertheless, it is eaten by the lower classes of people, who are accustomed to drink water, after partaking of such repast. The Common Strawberry-tree may be propagated by cuttings, by layers, or by seed. These should be set early in March, in pots of light rich earth, and afterwards put in a hot-bed: in the course of five or six weeks, they will strike firm root in the mould, when they ought to be gradually inured to the air. During frosty weather, it will be advisable to shelter them, and occasionally to expose them to the open air, in mild weather. After two or three years, the young plants may be removed to the place of their destination; for they will have become so hardy as to resist the severest winters, in any soil or situation.

2. The *Alpina*, MOUNTAIN STRAWBERRY-TREE, or BLACK-BERRIED ALPINE ARBUTUS, thrives on dry mountains in Scotland, and the Western Isles, where its flowers appear in May, and are succeeded by round, black berries. This species is refused by goats; its fruit possesses a flavour slightly resembling that of black currants; to which, however, it is greatly inferior. Its branches and evergreen leaves have been advantageously employed in tanning.

3. The *Uva ursi*, BEAR-BERRIES, BEAR WHORTLE-BERRIES, or BEAR-BERRY STRAWBERRY-TREE, grows on dry heaths, and woods, chiefly in the Highlands of Scotland; and flowers in the month of May or June. This plant is refused by horses, cows, goats, and sheep. Its leaves have an astringent bitterish taste, and are generally

rally used in Sweden, and Russia, for tanning leather; and, in combination with iron or its preparations, for striking a *black* colour. When dried and pulverized, they have been advantageously given in doses of from a scruple to a dram, repeated two or three times every day, in calculous and nephritic complaints.

The berries of both the last-mentioned species of the Strawberry-tree, have been recommended by LINNÆUS, as useful substitutes for grain, in the process of making *bread*: on account of their bitter taste, however, they ought to be bruised, macerated in different cold waters, and then baked or dried in an oven, before they are fit to be mixed with any other flour. But, even in this improved state, we conceive, they would reward the trouble of the housewife, only in times of great scarcity.

STRAW-CUTTER, or **CHAFF-CUTTER**, as it is commonly termed, denotes a machine for the purpose of cutting straw, with a view to feed horses and cattle to greater advantage.

In the year 1797, the Society for the Encouragement of Arts, &c. conferred a reward of 30 guineas on Mr. ROBERT SALMON, for his improved machine for cutting straw, of which we have given an engraving.

Fig. 1, A, A, are two knives, fixed on the inside of the fellys of two wheels B, B, which are firmly connected; the edges of such knives being at an angle of about 45 degrees from the plane of the wheels' motion. Farther, these knives are directed in such manner, that they are acted upon by the springs C, C; the latter being so adjusted, as to give them the re-

quisite degree of pressure against the box for cutting the straw: to prevent them from coming too forward, and thus occasioning an unnecessary friction, wedges are placed under the staples a, a, which must be drawn out as the knives wear, so as to facilitate their progress; a contrivance, by which new knives may occasionally be substituted, as they will always be duly regulated by the springs.

D, is a round wooden block, fixed to one side of the wheel, having four holes, and a moveable screw: to this block is attached, by means of screws, one end of the *feeding-arm* E, which runs in a direction nearly horizontal to the cross-bar F, at the end of the box G. Such end is fixed to the cross-bar, by the pin b, which may be shifted to five different holes in F: so that, by means of these, and of the four holes in the block D, twenty changes may be obtained in the length of the chaff.

The straw is brought forward by two rollers in the box G, delineated in Fig. 2, which are turned from the outside by the ratch-wheels H, (one being on each side of the box), and move with greater or less velocity, accordingly as the stroke is given to the cross-bar by the *feeding-arm* and wheel. Thus, when the knife cuts, the straw remains at rest; and, on removing the pin from the cross-bar, the supply immediately ceases; though the motion of the knives may continue.

I, is a pressing weight, suspended beneath the box, which may be rendered more or less powerful, by shifting it on the bearer K, whence it depends: such weight may also be inclined to either side, according to circumstances; and will contribute to force the straw towards

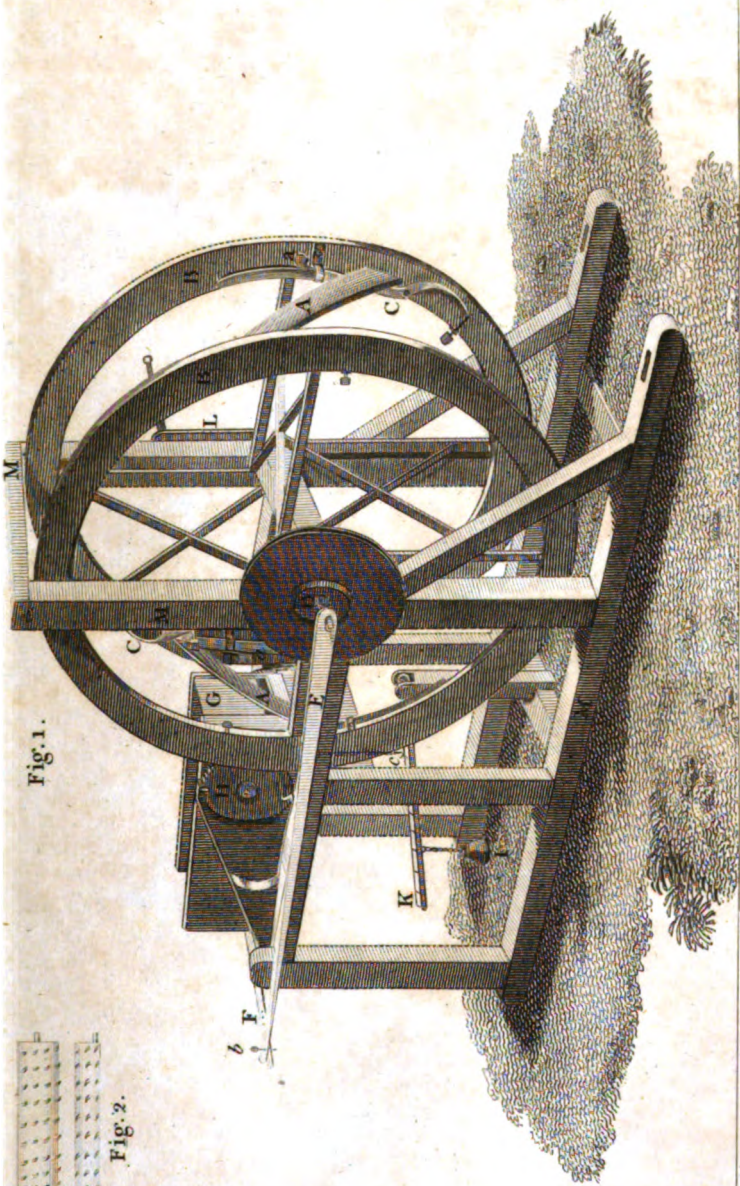


Fig. 1.

Fig. 2.

M^r Rob^t Salmon's Improved Machine for Cutting Straw.

Fig. 1.

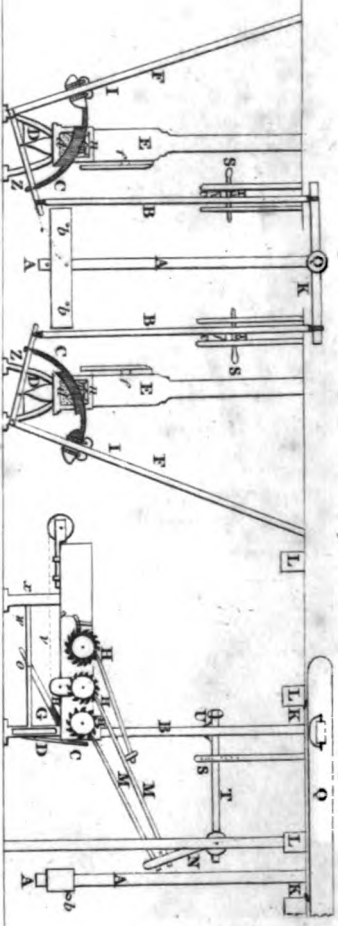


Fig. 2.

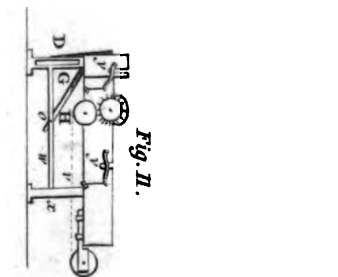


Fig. 11.

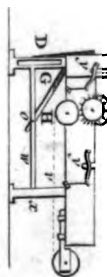


Fig. 7. Fig. 3. Fig. 4.

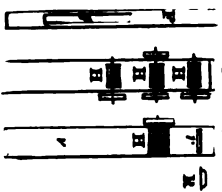


Fig. 5.



Fig. 12.

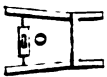


Fig. 9.



Fig. 8.



Fig. 6.



Fig. 10.



100
Inches.

Sound (Hirsch's newly invented "Horn" patent).

wards the knife, while it counter-balances the ratch-wheel of the upper roller. Near the fulcrum of this *bearer* is fastened a chain, represented by the dotted line *c*; the upper end of which is connected with a roller, having at each extremity a small iron bar, that is joined to the end of the upper-spiked roller; so that the straw is uniformly pressed between the two cylinders.

L, is a winch, serving to turn the machine.

M, M, M, M, the frame of the implement.

Fig. 2, represents the two rollers above alluded to, in describing the box *G*.

With a view to employ this straw-cutter to the best advantage, its inventor proposes to place a second box at the end of the first: it may be made of any length, and suspended by a line and counter-weight; by means of which its end is brought down level, while it is filling with straw; then drawn up, so as to give the second box a declivity; and thus the straw is more expeditiously brought forward. The chief improvement of this additional apparatus is, the facility with which straw may be cut, while considerable time is saved; as it will not become necessary to stop at intervals, in order to supply the machine.

In February, 1801, Mr. WILLIAM LESTER, of Hardingstone, Northampton, obtained a privilege for his ingenious contrivance of cutting straw, hay, tobacco, &c. by an engine, to which we have alluded under the article *HAY*; but, not having been able to procure a satisfactory account of his patent, we shall only remark, that the best proof of its merit, is the general

adoption, which we understand it has experienced in Northampton and its vicinity.

The latest invention for this useful purpose, is the Straw-cutter employed by Count de RIESCH; of which we have been induced to give an engraved sketch; on account of the extensive advantages it promises to afford to the proprietors of cattle, by diminishing human labour.

Description of Count RIESCH'S newly-invented Straw-cutter.

Fig. 1, represents a front view of the machine.

A, the balance, being fastened at the upper end of the cylinder *Q*, is directed and put in motion by one person: with this view, there is a pivot, *P*, applied to that cylinder (which pivot is explained in *Fig. 10*, and likewise appears in *Fig. 2*, at *K*, in a socket, *L*), which is managed by a handle in the piece of timber, at the lower part of the balance *b, b*.

B, B, are the levers which, by the action of the balance *A*, are alternately raised, so that the knives *C, C*, cut the supply of straw in *d, d*, subsequent to the motion of the arms *Z, Z*; which are connected with such levers and knives.

C, C, the knives.

D, D, the legs of the boxes:—*d, d*, represent the projecting straw submitted to the operation.

E, E, the upper parts of the legs before alluded to, terminating, and secured, at the top; in order that the boxes may not be moved or dislodged by the motion of the engine. At *f, f*, the two places are visible, through which the moveable arms, *Fig. 2, M, M*, are inserted.

F, F, the beams, which are secured

cured both above and below, and in which the knives are moved by small rollers, as described *Fig. 9*.

m, m, (scarcely legible in the plate) are the cushions or *guards*, which push forward the straw, contained in the box: this object is especially promoted by the springs, *n, n*, that compress the cushions, and ought, therefore, to be sufficiently strong and elastic: but, according to a later improvement of Count RIBSCH, wood-screws placed on *guard-boards*, instead of cushions, more effectually answer the purpose.

S, S, the regulating pins, by means of which the straw may be cut to any length required.

T, T, (being very minute in our plate) represent the diameter of the two levers.

U, U, (below the last-mentioned letters) are small cornices.

Fig. 2, a side view of the engine, in which the whole length of the box is delineated: and, as by the mechanism of this contrivance the straw is pushed forward, the parts by which such purpose is effected, are here distinctly represented:

1. The knife *C*.
2. For the illustration of *K*, and *L*, see *Fig. 6*.
3. The ratch-wheels *H*, as exhibited in another point of view, *Fig. 3* and 4.
4. The arms *M, M*.
5. The lever *N*.
6. The regulator *S*.
7. The cornice *U*.
8. The lever *T*, in full length, and to the extremity of which, a sufficient quantity of lead is attached, to prevent it from remaining stationary, when elevated.
9. The canvas *v*, which is farther explained in *Fig. 4*, and 11.

10. The lower transverse hole *o*, which is displayed in *Fig. 11*, and 12; as likewise is *w*, in *Fig. 11*.

Fig. 3, a sketch of the inner part of the box, with its compressing boards *H, H, H*, which are delineated in *Fig. 2*, and 11; but a profile of which, exhibiting their iron teeth or cogs, is given *Fig. 8*, *H, H, H, H*.

Fig. 4, also represents the inner breadth of the box, though from the lower part, as far as the regulating wheel;—farther, the canvas *v*, on which the straw is placed: the latter is carried along by the rotary motion of the wheels, accordingly as the arms are acted upon by the lever.—The letters *r* and *R*, occurring in, and at the side of this figure, will be accounted for in the description of the following.

Fig. 5, is an indented piece of machinery, called the *straw-thruster*, delineated *Fig. 2*, and which is attached below the feeding-box in front of the frame, being marked by *G. Fig. 2*, and 11. This thruster rises together with the levers; as it is intimately connected with the arms *Z*, into which the knives are inserted, having the size of the piece denoted by the letter *R*, (*Fig. 4*), and the aperture, through which it passes at the bottom of the box, being visible at *r*.

Fig. 6, is the socket supporting the roller *e*, by means of the pivot *P*, represented *Fig. 10*, and which roller moves as may be perceived by the upper beams marked *L, L*, at *K, K, Fig. 2*.

Fig. 7, section of part of the beam in which the knives *C, C*, of *Fig. 1*, and 2, move in *I, I*; so that they may be placed higher or lower: hence their scope or extent of motion

tion may be observed in this figure, pointed out by the letter *q*.

Fig. 8, has already been described in Fig. 3.

Fig. 9, has likewise been explained, by stating the mechanism of the beams, F, F.

Fig. 10, has been accounted for, at Fig. 1.—P, is the pivot; and *t*, the pin which serves to secure the former.

Fig. 11, a view of a box from the opposite side of Fig. 2: at the dotted lines *r, r*, is the canvas mentioned in the description of Fig. 4, with this difference, that in such figure it appears within, while in Fig. 11, it is shewn from without, in the same manner as the cloth passes round the ratch-wheels, while the machine is in motion.

Fig. 12, is a section of the box viewed from behind; the piece of wood *o*, at the bottom, with inserted spindles; and the aperture serves for the reception of the lower part of the straw-thruster G, Fig. 5. For the arm *w* moves behind at *x*, Fig. 2, and 11, in the same manner as the staves Z, Z, to which the knives are fixed. Lastly, the balancing levers marked *y, y*, Fig. 11, are designed for the purpose of more firmly compressing the straw by the appropriate boards:—at *f, f*, Fig. 1, is the place in which the arms, M, M, Fig. 2, pass and move during the operation of the machine.

The principal advantages of Count Ritzsch's straw-cutter, appear to be the following, namely, 1. That it cuts the straw in *two* boxes at the same time; 2. That the straw placed in such boxes is regularly advanced, without any farther aid or attention; and, 3. That the *chaff* thus manufactured, is not only eaten with avidity by

cattle, but also is more salubrious than any other cut straw; because it is rendered much *softer* by the powerful compression of the machine.—He farther observes, that one man is capable of cutting at least 100 trusses of straw in the course of one day, or within 10 hours; whereas, by the common method, five men are required for performing a similar task.

In order to explain more distinctly the mechanism of this apparently complicated machinery, it should be remarked that, instead of the usual *fly-wheels*, the whole motion is effected by means of the *balance*, A, Fig. 1, and 2. Thus, one person supplies the two boxes with straw, swings the moveable arms, and manages the work, without any farther assistance.—When the engine was first constructed, the action of the balance was extremely difficult, till the levers B, B, Fig. 1, were brought nearer to the roller Q; an alteration by which the *hypomochlion*, or the centre of motion, became shorter, and the power of the lever was better accommodated to the centre of the cylinder. Now the balance was easily moved, and by means of the regulating pins S, S, Fig. 1, the straw could be cut of various lengths; but, in case it be wanted uncommonly short, the teeth of the ratch-wheel *h, h, h*, Fig. 2, should stand more closely together; in consequence of which, the moveable arms *g, g, g*, will advance to a shorter distance, and protrude only a few lines of the straw, which may thus be cut to a very diminutive size.

In supplying the box with straw, the workman ought to dispose it in regular layers, as closely compressed as possible; for otherwise, if it

it be put there in an irregular manner, it will become entangled between the ratch-wheels, and the machinery will either fail of pushing it forward, or protrude it in bundles. Hence, the method of arranging the straw properly, requires especial attention; and its regular progression towards the knives cannot be effected, unless every part of the apparatus be in perfect order, and unison with the whole. With this view, the canvas *v*, Fig. 2, and 11, which contains the layers within the box (these being rolled forward by means of the cylinders H, H, H, Fig. 3), must be properly expanded. The compressing boards H, H, H, Fig. 2, and 11, should likewise be firmly applied by the regulating pin S. The levers U, U, Fig. 1, and 2, ought to be sufficiently raised in working the machine; as, in the contrary case, the moveable arm (straw-thruster) G, Fig. 2, and 5, consequently the moveable arms M, M, would not be sufficiently acted upon, so that the teeth of the ratch-wheels H, H, H, will then make but a slight *purchase*, while the wheels themselves have not the necessary reaction: thus, little or no straw will be pushed forward to undergo the operation of the knives.

STUCCO. See CEMENT.

STURGEON, or *Accipenser Sturio*, L. a fish, which is sometimes taken in the British rivers; being, however, generally imported from Russia, or the Baltic sea, as well as from North America: it is principally caught in the rivers Volga, Danube, and Vistula.

This fish grows to a prodigious size, frequently 18 feet in length, and weighing from 7 to 800 lbs. Its flesh is very delicate, firm, and

white; resembling veal, on which account it is greatly esteemed when roasted: it is, however, generally sold in a pickled state. The sounds of sturgeon afford the fish-glue known under the name of ISINGLASS; and, their roes, when properly dried and salted, are converted into CAVIAR, to which article the reader is referred, for an account of its properties.

STYPTIC, a term applied to medicines, which serve to stop hemorrhages, or effusions of blood.

Various vegetables may be advantageously employed as *external styptics*, such as the AGARIC, PUFF-BALL, &c.; but there are certain preparations of greater efficacy, the principal of which is the *compound powder of alum*. It consists of one ounce and a half of alum, and three drams of gum kino, which are finely pulverized, and incorporated. — One of the most successful styptics, however, is prepared by mixing one part of the caustic volatile alkali, with three parts of water: if this fluid be applied to a fresh wound, it effectually checks the flowing of blood, both from large and small vessels.

Prof. STARK, of Jena, recommends the following styptic powder; which, according to his experience, has proved uncommonly efficacious in suppressing profuse *uterine* hemorrhages, namely: Peruvian bark, two drams; cinnamon, one dram; blood-stone (*lapis haematites*) half a dram; and loaf-sugar, two drams: let these ingredients be reduced to a fine powder; a tea-spoonful of which is to be taken every hour, or oftener, in chamomile or balm tea. — We have no doubt of its good effects.

SUBLIMATE, a chemical preparation,

paration, consisting of MERCURY combined with the marine acid. Being extremely corrosive, and the manufacturing of this drug being attended with great danger to health, it is generally imported from Venice and Holland; paying a duty of 9½d. per lb.

Solutions of corrosive sublimate, in the proportion of one dram to a quart of water, are chiefly employed for consuming *proud* flesh, and cleansing foul ulcers. A much weaker solution is sometimes used by the gay, as a cosmetic for removing cutaneous eruptions. In a dry state, mixed with flour, honey, &c. the sublimate forms a powerful composition for destroying rats, mice, or other vermin; but, on account of its deleterious properties, the greatest caution is requisite, particularly in places to which children have access: for, as they are accustomed to *taste* every thing, such mistake might be productive of fatal consequences. In case, however, any portion of this poison should have been accidentally swallowed, no time should be lost in resorting to the remedies already pointed out, in vol. i. p. 74.

SUCCORY, or *Cichorium*, L. a genus of three plants, the following of which are the principal; namely:

1. The *Intybus*, WILD CICHORY, or SUCCORY, is an indigenous biennial, growing on the borders of corn-fields, chiefly in calcareous soils; where it flowers in July and August. This vegetable is eaten by sheep, goats, and swine, but refused by cows and horses. Its leaves, when *blanched*, form an ingredient in early spring salads; and, if this plant be cultivated in a light and somewhat moist soil, they

will be totally divested of their bitterness. The roots are moderately bitter: if gathered while young, they may be eaten among other vegetables; or, when dried and reduced to powder, they may be usefully converted into *bread*.—In its medicinal properties, the Wild Succory is cooling and corroborant: its juice, when taken in considerable quantities, for several weeks, so as to produce a slight diarrhoea, has been found very serviceable in inveterate cutaneous diseases. In Germany, the roots are dried, cut in small squares, roasted, ground and mixed with *coffee*; which, by some, is esteemed as a wholesome corrector of this foreign drug.

2. The *Endivia*, or ENDIVE, is an exotic annual species, which is generally reared in our gardens, as an ingredient in winter salads. It is propagated by scattering the seeds in spots of open ground, at intervals, from the beginning of June to the end of July; in order to obtain a supply for the table. The young plants must be removed into beds or borders, that have previously been well prepared by the spade: and, as the chief excellence of endive consists in the whiteness of its inner leaves, it will be advisable, either to cover them with flower-pots, or to tie them loosely together, when nearly full grown, so as to exclude them from the sun, for two or three weeks; in consequence of which, they will become perfectly blanched. In the winter, they are either covered with straw, and mats; or preserved in fresh sand, in a dry cellar. In its properties, this plant is not essentially different from the preceding species.

SUCK-

SUCKLING, is the act of administering the maternal milk to an infant, by the breast.

Having already, in the articles **BREASTS**, **MILK** (vol. iii. p. 202), and **NIPPLES**, stated the particulars relative to this important function in the animal economy, we shall briefly observe, that *all* mothers are by Nature enjoined to *suckle* their own offspring; and that they cannot in justice decline such affectionate office, excepting from the most urgent and absolute motives; such as a general diseased habit; want of milk; or a local disease in the breasts. These impediments, however, seldom occur; though many delicate women are apt to assign a variety of other causes, which induce them to neglect a duty, incumbent even on irrational creatures.

If it be true, that milk is secreted in proportion to the quantity *drawn*, it follows, that by such practice the breast can never be so emptied as not to receive a fresh supply. Hence, the infant should be *suckled*, and put to the breast, as soon as it evinces a desire, which will be in less than 12 hours after delivery, frequently within an hour; provided no food be previously allowed. Although the quantity of milk thus obtained be very small, yet it is adapted to the purpose; and will not only afford sufficient nutriment to the child, but at the same time be calculated to produce another useful effect, namely, that of cleansing the bowels, and carrying off the *meconium*, or the first excrement. For these obvious reasons, we fully agree with the Rev. C. CRUTTWELL, who judiciously observes, that "at any time when the nipples and breasts are not uneasy, or inflamed, the

child may suck without fear; but, if omitted till the breasts become uneasy or inflamed, every effort of the child's sucking will add to the mother's torment, deprive her of rest, and most probably increase the disease."

SUET, is the solid fat secreted in the cellular membrane under the skin, and various parts of the animal body, for instance, in sheep, oxen, &c. but not in the human species.

The uses of *suet*, for culinary and other purposes, require no farther explanation: we shall therefore only remark, that dishes prepared from this substance and flour, ought to be boiled, till the fat be intimately blended with the mealy ingredient; as otherwise they will prove oppressive to the stomach, and be with great difficulty digested.—See also **PUDDING**.

SUFFOCATION, denotes a suspension of the most important vital function, namely, that of respiring or breathing; without which animal life cannot be supported.

This dangerous casualty may arise from various causes, such as the want of air to a person immersed under water; or the irruption of that fluid into the chest; in which case it is termed **DROWNING** (see that article). It is also occasioned by too great a determination of blood to the lungs, as in quinsies, suffocative catarrhs, &c.

Another cause of suffocation, is the introduction of any substances into the windpipe, or the swallowing of such foreign matters as remain fixed in the gullet; and by compression prevent the access of air to the lungs; in which cases, a total cessation of breathing may be apprehended. To obviate this fatal accident, gentle percussion of the

the shoulders and back will be advisable: the steam of milk, or water, should be inhaled, and the throat be tickled with a feather dipped in oil. Farther, the patient ought to take copious draughts of water-gruel, milk, oil of almonds, or any other lubricating fluid; and, if the bodies adhering to the throat be *blunt*, they may be thrust down by means of a long wax taper, which has been previously rendered pliable by warmth, and also immersed in oil: or, if this cannot be speedily procured, a piece of sponge may be fastened to a wire, which should be covered with leather, then oiled, and employed for a similar purpose.—See also GULLET, and METALLIC pointed substances.

The vapour arising from boiling wines or strong liquors, when inhaled, tends to impede the circulation of the blood, and sometimes even produce *suffocation*. Similar consequences may ensue from inspiring the fumes of sulphur, antimony, and a variety of other mineral and vegetable substances, particularly of CHARCOAL.

First symptoms of suffocation:—Giddiness; head-ach; lethargy; fainting; convulsions; and general torpor.

External appearance of persons suffocated by the deleterious fumes arising from charcoal; various metals, such as copper, lead, antimony, and mercury; the vapours from fermented liquors, moist wood, flax, and turf; as well as in consequence of respiring or sleeping in unventilated apartments, caverns, and mines:—The head, face, and neck are swoln; the eyes are propelled from their sockets; the tongue is protrud-

ed at one side of the mouth; the jaws are firmly closed; the face is of a livid, and the lips are of a deep-blue colour; the abdomen is inflated; the body is insensible to pain, and appears to be in a profound sleep.

Immediately on discovering a person in such unfortunate situation, the windows and doors ought to be opened; the body undressed, removed to the open air, and supported in a leaning posture on a chair. Next, the patient must be covered with flannel or blankets, the face be sprinkled with vinegar, and the pit of the stomach with cold water; and, if it be convenient, the whole body, or at least the legs, should be plunged into a cold bath. After each application of vinegar or water, the skin ought to be rubbed with flannel or a soft brush; then leaving the person, thus situated, for a few minutes in an undisturbed state. Farther, clysters consisting of vinegar and water, will be useful; and, on the return of life, an inclination to vomit must be promoted by a feather dipped in oil, while gentle friction is to be continued, at intervals. The first symptoms indicating this happy change, will be, foaming at the mouth, and shivering of the whole body, especially after affusions of cold water.

In some cases of suffocation, however, it will be advisable to employ the united powers of electricity; blood-letting; *bronchotomy*, or the opening the wind-pipe by an incision; or the earth-bath; or the artificial introduction of air into the lungs, by means of a pair of bellows described vol. ii. pp. 190-91.—If these efforts prove successful, so that the patient is again able

able to swallow, the most proper drink will be vinegar and water, or infusions of mint and balm.

SUFFOLK-GRASS. See Annual MEADOW-GRASS.

SUGAR, a sweet concrete juice, obtained from the Sugar-cane, or *Saccharum officinarum*, L. a species of reed or cane, which grows in the East and West Indies. According to modern chemists, however, it is a true essential salt, capable of crystallization; and which is contained, in a greater or less proportion, in all vegetables of a sweet taste, but most abundantly in the plant above mentioned.

The culture of sugar-cane being impracticable in Britain, we shall only observe, that it grows to the height of from $3\frac{1}{2}$ to 7, and sometimes to 12 feet, in strong deep lands. When ripe, it assumes a fine straw-colour; and is usually cut at the age of 12 or 15 months, according to the season, or the nature of the soil.

The canes are divided into pieces about a yard in length; tied up in bundles; and conveyed to a mill; where they are expressed between three upright wooden rollers covered with iron. The saccharine juice is conducted into a receiver; and, being apt speedily to ferment, it becomes necessary to separate the sugar as soon as possible. This object is effected by clarifying it in a boiler, over a fire, with a small portion of pulverized quick-lime; after which it is evaporated in a cauldron, till it acquires a due degree of consistence; when it is poured into coolers. As the inspissated fluid becomes cool, the sugar spontaneously shoots into irregular crystals, separated from the mother-water. Next, the granulated matter is conveyed to the curing-house, where the treacle is

completely drained; in which dry state, the former is called *raw*, or *muscovado* sugar: thus it is sent to Europe, where it is subsequently refined.

The most perfect purification, or *refining of sugar*, is performed in the following manner: The raw powder is again boiled in proper kettles, with lime-water, and bullocks blood (that has been previously strained, and deprived of its excrementitious parts); when it is boiled down to a proper consistence. It is then laded into vessels to cool, being continually stirred, to prevent it from shooting into large crystals; when perfectly cold, it is poured into unglazed clay moulds, of a conical form, and suffered to coagulate. Farther, with a view to carry off any particles of syrup that may still remain in the refined mass, the lower points of the moulds are open, and covered to the thickness of several inches with clay previously softened in water, and which is occasionally moistened. In this manner, the sugar at length acquires the requisite degree of whiteness and fineness; in which state it is denominated *loaf* or *lump* sugar; and, after being dried in heated rooms, it is ready for use.

In August, 1784, a patent was granted to ROBERT MURRAY, Esq. for his discovery of a method of refining sugar, and making it from the cane-juice. As, however, his processes are too minute, to admit of being detailed in this work, the reader will consult the 4th volume of the *Repertory of Arts*, &c.

A patent was also granted in June, 1801, to THOMAS WAKEFIELD, Esq. for a new method of refining sugar. It consists simply in placing the raw, or muscovado sugar, in any porous vessel; when it

it is to be subjected to a weight, acting by rollers, by a screw, or by a wedge, "with the help of a steam engine," the action of a mill, or any other means of applying force. Thus, part of the colouring matter, as well as other impurities, will be thrust out; and, from the moisture expressed, sugar, molasses, or rum may be obtained, by the usual processes. The pressure may be repeated, according to circumstances, and the relative purity of the sugar; after which it may be refined by the methods usually practised.

Sugar having become an article of almost indispensable use to every person in *civilized* life, various attempts have been made, with a view to procure it from other vegetables; and particularly from the following, namely:

1. The White BEET; the saccharine properties of which were discovered upwards of 50 years since, by M. MARGRAFF; and his process having been improved by M. ACHARD of Berlin, we shall state the method of preparing sugar adopted by the latter. The fresh beet-roots are first washed, and submitted to the action of a mill, which reduces them to a pulp: next, their juice is extracted by means of a press, and boiled over a gentle fire, till it is converted into a thin syrup. It must now be carefully separated from the mucilage, adhering to the bottom of the cauldron, or kettle; then strained, and boiled a second time, till it acquire a proper consistence for crystallization; a point which can only be ascertained by experience. The syrup is afterwards poured into tin vessels, from two to three inches deep, that the grain may crystallize: these vessels are directed to

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be placed on frames, in a room heated by a stove to a considerable, but uniform temperature; and, in the course of two or three weeks, the sugar will be separated in the form of small crystalline grains. The whole is then poured into linen bags; in which, on compression, the sugar remains, while the strained liquor is received into vessels; and, after undergoing similar processes, it will yield an additional quantity of saccharine matter.—By this management, 20lbs. of roots produce, upon an average, one pound of sugar; and, to such perfection has it been carried, that M. ACHARD is enabled to sell the sugar at 3d. per pound.—As we cannot enter into farther detail respecting the culture, preparation, &c. of the Beet-root, we must refer those readers, who wish for more minute information, to Mr. A.'s "*Circumstantial Account*;" of which a translation appeared in Mr. NICHOLSON's *Journal* for September, 1799.

2. The Sugar-MAPLE, of which we have given an account in vol. iii. p. 164-65.—The juice of this tree is obtained by *tapping*; and, after being collected in proper vessels, and boiling it in the usual manner, it is converted into sugar, which is little inferior to that manufactured from the sugar-cane: as it is now prepared on a large scale in America, with the greatest success, the culture of that valuable tree deserves to be more generally attended to in Britain. There are various other plants which afford sugar, particularly parsnep-roots, skirrets, carrots, and Indian-corn: the latest experiments that have been made with these vegetables, are those of M. HERME-

M

STAEDT,

STAEDT, whose memoir is also translated in Mr. NICHOLSON'S *Journal*, vol. iii. for October, 1799.

With a view to diminish the use of sugar, or at least to afford a substitute for that article, M. M. MARGRAFF and LOWITZ recommended two different processes for purifying honey, so as to answer the common purposes of a *sweetener*; but their expedients being too expensive, FATHER GIOVANE BATTISTA DA ST. MARINE, an ingenious Venetian Monk, has proposed the following method: To three parts (by weight) of honey, eight of water must be added; together with one part of charcoal, broken to pieces, but *not reduced to powder*. This mixture should boil for one hour, when it ought to be filtered; and, after being thus purified, it is to be evaporated over a slow fire, till it acquire the consistence of a thick syrup, which will be as palatable as sugar. This process is cheap, and easy; but we question the advantage of converting honey into a saccharine substance; as the former may, in this country at least, be purchased at a lower price.

Sugar affords one of the most useful spices; and is at present classed among the principal necessities of life. If moderately taken, it operates as a gentle solvent, and promotes digestion; but, when its use exceeds the bounds of moderation, especially in pastry or confectionary, it vitiates the stomach; palliates the appetite; and eventually injures the teeth. Persons, therefore, whose digestive organs are impaired; whose constitutions are debilitated; or who are subject to hypochondriac or hysteric affections; ought sparingly to partake of this sweetening salt. On the other hand, sugar is an excellent

antiseptic, and antiscorbutic: indeed, Dr. RUSH maintains, that it is preferable to most kinds of aliment, being compressible into a small compass; and its nutritious properties are not liable to be affected, unless by keeping it in a moist place. He farther observes, that it is an excellent antidote against worms, and probably also against malignant fevers; for these have not occurred so frequently, since sugar has formed a general article of diet. Lastly, in a candied state, it is of service in disorders of the chest, occasioned by the variations of the weather; as it constitutes the basis of many palatable remedies.

By the 12 CAR. II. c. 18, and 27 GEO. III. c. 27, all sugars must be imported either in British vessels, or in such as belong to the subjects of that European country, of which the goods are the produce; but, in both cases, they must be legally navigated, on pain of forfeiture.—Sugar is subject to the following charges, namely: if it be refined, to the sum of 5l. 6s. 4d. per cwt.; brown, and muscovado sugars pay, if from British plantations, 13s. 2d.; if from other countries, 1l. 17s. 4d. per cwt. But, in all cases, it is prohibited to be imported from Germany and the Netherlands.

SUGAR-CANDY, is the essential part of the saccharine matter formed into large crystals, by slowly evaporating the clarified syrup. The whole process is managed in strongly-heated chambers, by the aid of vessels containing numerous threads that intersect each other; and which are fastened to the sides, in various directions. The sugar, thus treated, shoots into crystals around the threads; and, accord-

ing

ing to its relative purity, the latter acquire a brown, yellow, or white colour. Sugar-candy is chiefly used in a pounded state, for sweetening coffee, and by persons labouring under hoarseness and coughs; the violence of which it contributes to relieve, by lubricating the membranes, and promoting expectoration. Brown Sugar-candy pays, on importation, the sum of 3l. 6d. per cwt.; and the white sort is subject to the charge of 4l. 10s. 9d. per cwt.

SUICIDE, is a term expressing either the crime of self-murder; or it is applied to the person committing such unnatural deed.

It is remarkable, that this violation of divine and human law, has prevailed chiefly among the *most civilized nations*; and that it occurs more frequently among the wealthy, than the indigent classes of society. A combination of circumstances generally co-operates, to induce an unsettled mind to commit such unjustifiable crime: thus, it has been urged, that the copious use of *tea, animal food, spirituous liquors*, and the sulphureous exhalations of pit-coal, in a *variable* climate, instigate to suicide; because they uniformly tend to depress and enervate the human constitution. It would exceed our limits, to refute the absurdity of such notions; and, though the perpetration of this rash act may sometimes originate from insanity, yet we may confidently maintain, that it is more frequently the result of a defective education furnishing no fixed moral principles, and consequently laying the foundation of vicious habits; such as gaming, and dissipation followed by disappointed ambition, or the desire of avoiding public disgrace;

than the consequence of *ennui*, or a weary life. Hence, various punishments have been devised in different countries, to be inflicted on the bodies of those who thus outrageously terminate their existence.

With a view to deter unprincipled individuals from the commission of suicide, the British legislature has enacted, that all the personal property of a *felo de se* shall be confiscated to the Crown, while the body is not only excluded from interment in consecrated ground, but also directed by the coroner's warrant to be buried in a public highway; being pierced with an iron stake, to add to the ignominy. Although the utmost rigour of the law is, in later times, seldom exerted on those occasions; yet we humbly conceive, that the present lenity is not compatible with the frequency of the offence; nor does it appear on *critical* investigation, that a *posthumous* corporal punishment is likely to produce the desired effect on profligate characters. Hence, we are of opinion, that *preventive* measures are, in this respect, the only means left to the power of the State; because, after the crime is committed, neither *confiscation* of property (which seems to involve open injustice to the distressed relations of the deceased), nor public *exposure* of the body, are calculated to give the least reparation to the injured community. On the contrary, such spectacles of executions after death, cannot fail to make a very unfavourable impression on the attending populace; to steel their hearts against refined moral feelings; and to render them in a manner indifferent, respecting the consequences of good and bad actions.

Thus, experience has proved, that numberless thefts are committed during those public exhibitions of criminals; so that it is not *bad*, but *good examples*, which have a beneficial effect on the minds and morals of a people, who are yet susceptible of improvement. For these obvious reasons, we propose that every individual in whom symptoms of despair, either by serious verbal declaration, or by his inconsistent actions, are discoverable, ought to be strictly guarded, reformed, and even punished, though at first in a lenient degree; for instance, by solitary confinement, hard labour, a sparing diet, &c. without permitting the use of dangerous weapons, or any other instruments. Farther, by teaching young persons to set a *just value* on life, and the dignity of human nature, they will not easily acquire false conceptions of pride and honour; or estimate things only by their influence on the external senses; or wish to appear of greater importance than they are entitled to, either by their merits or rank in society.

Besides, there are many other causes which ultimately lead to suicide: among those of a physical nature, we shall only mention, 1. Hypochondriac and melancholic complaints, arising from inveterate obstructions in the abdomen; and, 2. A very tender and irritable nervous system. Farther, if we ask the intelligent divine, respecting the origin of this growing evil, he will justly observe, that it chiefly arises from immoral habits, and the neglect of public or private worship;—the honest lawyer will allow, that it is often the consequence of unsuccessful litigation;—but the experienced physician main-

tains, with equal justice and truth, that it originates from excessive repletion; from the vicious custom of drinking immoderate quantities of vinous and spirituous liquors; from eating late and hot suppers; night-gambling; and from indulgence in passions of every description.

Those of our readers who wish to investigate this interesting theme, will derive information and amusement from the perusal of Mr. MOORE's *Full Inquiry into the Subject of Suicide* (2 vols. 4to. 11. 11s. 6d. boards, Rivington, 1790), in which its effects are fully considered, and illustrated by numerous historical examples.

SULPHUR, or BRIMSTONE, a hard inflammable mineral, of a yellow colour: it is insoluble in water; destitute of smell, except by friction, or when heated; and possesses a peculiar, faint taste.—This simple substance is found, in a native state, in various parts of the world, particularly in the vicinity of volcanoes, being often combined with other minerals: it is generally cast into *rolls*, for sale, being known under the name of *roll-brimstone*.

Sulphur, when gently heated, rises in vapours, which are easily kindled; and, if it be suffered to cool gradually, it shoots into crystals resembling thin needles, termed *flowers of sulphur*: when combined with any alkaline salt, such as pot-ash, and melted in a moderate heat, and in a close vessel, a compound is produced, which is named *liver of sulphur*. This preparation is of a liver-brown hue; and, while dry, emits no peculiar odour; but, in a moist state, it evolves a very offensive smell, resembling that of putrid eggs: it deliquesces in the air, and is completely dis-

dissolved in water; the solution acquiring a yellow, golden shade. On melting it in a continued heat, till it grows tough, and assumes a red-brown colour, then pouring the liquid mass into water, it will remain as soft as wax, and yield to any impression from engraven stones, metals, or coins. After becoming cold, however, it recovers its former hardness and colour.

This mineral is usually imported in large irregular masses, which are melted into rolls, with the addition of coarse resin, flour, &c.; whence it assumes a pale yellow tint. It pays, on importation, the sum of 7s. 4d. per cwt.

Sulphur is of great utility in the arts: when converted into an acid by combustion in the open air, it affords that extensively useful liquid, vulgarly termed *oil of VITRIOL*; considerable quantities of which are consumed in the various processes of bleaching, dissolving metals, especially iron, and in other useful arts: it is also of great service in cementing iron railing to stones, by simply melting, and pouring it into the interstices. See also *GUM-POWDER*.—Brimstone is farther advantageously employed for whitening silk, wool, or other articles, by exposing them to its fumes, during combustion.

In medicine, sulphur is almost a specific in cutaneous diseases, whether administered internally with honey or molasses, or applied externally in the form of ointment. In the piles, it is of evident benefit, when taken in small doses; nay, it is occasionally prescribed in chronic catarrhs and coughs; as it operates gently, by promoting insensible perspiration through every pore of the skin.—See likewise *ANTIDOTES*.

SULPHUR-WORT, the *COMMON*, *HOG'S FENNEL*, or *HARE-STRONG*, *Peucedanum officinale*, L. a native perennial, growing in salt-marshes; producing flowers in the months of June and July.—Both the roots and stalks of this saline plant are from three to four feet long; have a fetid odour, and an acrid, bitterish taste. If an incision be made in the former, during the spring, a considerable portion of yellow juice will exude, and concreate into a gummy resin, retaining the sulphureous smell of the root. The expressed juice of this plant was formerly employed in lethargy; but its medicinal properties have never been ascertained with precision.

As the sulphur-wort is an useless weed in meadows, it should be diligently extirpated; though *BECHSTEIN* observes, that the dried roots have been successfully employed in fumigations, to prevent the spreading of epidemic distempers among cattle.

SUMACH-TREE, or *Rhus*, L. a genus of exotic trees, comprehending 33 species, of which the following are the most remarkable, namely:

1. The *Coriaria*, or Elm-leaved Sumach, a native of Italy, Spain, Syria, Turkey, and Palestine, where it grows to the height of eight or ten feet. The branches of this species, when dried and reduced to powder, are substituted for oak-bark in tanning, particularly Turkey, or *MOROCCO-LEATHER*: its leaves are occasionally employed on the Continent in medicine, being reputed to be uncommonly astringent and styptic. *TROMSDORF* obtained from the reddish, compressed hairy berries of this tree, an essential acid salt, similar

to that of lemons, by a strong decoction, and subsequent evaporation; when small white crystals were formed, on exposing it to a cold place. Both the root and berries produce a reddish, and the rind a yellow colour. In Germany, the clustered fruit of the elm-leaved Sumach is suspended in vinegar, to increase its acidity.

2. The *Copallinum*, Narrow-leaved, or Beach-Sumach, is a native of North America, where it attains the height of from five to ten feet. The concrete juice of this tree, by incision in the trunk, furnishes the gummy-resinous substance, called COPAL.

3. The *typhinum*, Virginian Sumach, or Vinegar Plant, has long been cultivated in the northern parts of Germany. The whole of this shrub is advantageously employed in tanning: it may also be used in dyeing black, green, and yellow colours: and, when combined with vitriol of iron, it produces a good ink. The ripe berries, if boiled with alum, afford a deep black dye for hats: the Americans dry the leaves, and smoke them as a substitute for tobacco. The yellow-marbled wood is in great request among cabinet-makers. Lastly, bees are uncommonly partial to the flowers of the Virginian Sumach; as they afford a larger proportion of honey than those of any other vegetable: hence, the culture of this species may be productive of great profit to proprietors of bee-hives.

4. The *Cotinus*, or Yellow Sumach, a native of Asia, and the southern parts of Europe, is also cultivated in Germany. Its leaves and branches are likewise useful in tanning: the wood and bark yield an orange dye; and the latter,

with the addition of Brazil-wood, imparts a chesnut-colour. GÜLDENSTADT remarks, that the leaves of this species are preferably employed by curriers; as they do not tinge the skin, excepting with a faint yellow cast; so that the *Morocco-leather* may subsequently be dyed of the most pleasing shades. PALLAS informs us, that the dyers of Astrakhan prepare the genuine *Turkey-red* on cotton, by a decoction of the leaves of the Yellow Sumach and galls; with a due proportion of alum; having previously soaked the yarn in fish-oil, which we suppose to be that obtained from the sturgeon.

All the species before enumerated, are hardy trees, and will flourish in any open situation, that is not too much exposed: they may be propagated by their seeds in autumn; when these are to be sown in pots, containing light earth. During the winter, it will be advisable to shelter them beneath a frame; and, on the approach of spring, they should be plunged in hot-beds, to promote their growth. When the young plants appear, they must be gradually exposed to the weather, and afterwards protected in a similar manner, throughout the succeeding winter: in the spring, they ought to be transplanted into nurseries, at the distance of one foot from each other, and in rows three feet apart. Here they should remain for two or three years, till they acquire sufficient strength to be removed to the place of their destination.

SUN, the brightest and most important luminary, which imparts light to the world, and the presence of which constitutes the day.

The genial warmth of the sun, conveyed to the earth by its rays, evi-

evidently contributes to promote vegetation, while it conduces to the health and comfort of mankind. Its distance from the earth is not accurately ascertained; as it varies according to the motion of the globe; but, agreeably to the method lately discovered by M. KLIMM (professor of mathematics at Meissen, in Saxony), such distance, as well as the size of the sun, may be determined with tolerable accuracy, by calculating the proportion subsisting between the supposed diameter of the sun, and that of the earth. Hence we shall only add, that the axis of the former is, by astronomers, computed to be nearly 883,210 English miles; and its circumference is about 2,774,692 miles.

The sun is placed in the centre of the universe: it revolves round its own axis in 26 days; but its course on the ecliptic is accomplished by the revolution of the earth in 365 days and about six hours.—See KALENDAR.

Some naturalists have strangely conjectured the sun to be a *globe of gold*; because that metal endures the action of heat without diminution, for a longer period than any other metallic substance; while others have conceived it to be a *mass of ice*: but, as a discussion of these opinions, as well as of the *spots*, which have been observed on its surface, would lead us into abstruse disquisitions, the curious reader will consult the writers mentioned in the conclusion of the article ASTRONOMY.

SUNDEW, the ROUND-LEAVED, RED-ROT, or YOUTHWORT, *Drosera rotundifolia*, L. an indigenous perennial, growing in mossy bogs, and flowering in the months of July and August. The whole of

this singular plant is acrid, and its juice is sufficiently caustic to erode corns, or warts; and, if it be properly diluted with milk, it forms a safe remedy for removing freckles, and similar blemishes of the skin. Any part of this vegetable coagulates milk, in a manner similar to that of the Common BUTTERWORT; and it is likewise supposed to occasion the *rot* in sheep. On the other hand, the growth of the Youtwort, in particular situations, affords an useful guide in digging for *turf*.

SUN-FLOWER, or *Helianthus*; L. a genus of exotic plants, consisting of 14 species, most of which are cultivated in Britain: the principal, however, are:

1. The *annuus (corona solis)*, or Common Sun-flower: it is easily propagated in any common soil, either by sowing the seeds, or by parting the roots in the month of March. Within a few weeks, the plants will appear; and, when about 6 inches high, they should be removed into the borders of gardens, or other places selected for their growth, at the distance of 15 or 18 inches, in *quincunx* order. They must be occasionally watered; and, if weeds be properly eradicated, they will vegetate with such luxuriance, as to attain the height of six or eight feet: in July they bear flowers, which continue to blow till October, when they produce ripe seeds; which, on expression, yield a large proportion of a sweet, palatable *oil*. The young flower-cups of this plant may be dressed and eaten like artichokes;—the stalks are of a considerable size, often exceeding an inch in diameter: hence, they may with advantage be raised in situations where *fuel* is scarce; indeed,

we are not acquainted with any vegetable that is likely to afford greater advantages to an industrious cultivator who possesses a few acres of ground which, is not sufficiently fertile for corn or pasture-grasses. It deserves, however, to be remarked, that it greatly tends to impoverish the land; as it requires constant moisture, and would not be productive without artificial irrigation.—See KITCHEN-GARDEN, vol. iii. p. 50; and PAPER, p. 336.

2. The *tuberosus*, or Tuberous Sun-flower, a native of Brazil, likewise bears single stalks, which frequently attain the height of 9 feet. Having already described this species, under the head of ARTICHOKE, the *Jerusalem*, we shall only observe, that it produces no ripe seeds, and bears smaller flowers than the preceding; but it is more easily propagated: for, when the roots are once planted, they incessantly vegetate in the same soil, without requiring rich manure, or great attention; and, though left throughout the winter in the ground, they withstand the severest frost.

The different species of the Sun-flower have, hitherto, been cultivated only for ornament; but it must be obvious, that they may be rendered subservient to many economical purposes, especially as substitutes for *hemp*, in manufacturing pack-thread from their strong fibrous stalks. Lastly, it deserves to be noticed, that the flowers of these plants regularly take the direction corresponding to the sun's course, while they afford to *bees* a considerable supply of honey.

SUN-SCORCHED, is a term employed by gardeners, to express a distemper affecting fruit-trees,

in consequence of their sudden exposure to the heat of the sun; so that the fruit becomes withered.

The trees, chiefly liable to such injury, are those placed in situations, which seclude them from the vernal sun; so that they cannot afterwards sustain its scorching rays during the summer. It may, however, be prevented, by planting fruit-trees in proper aspects; and, if such as are affected be timely attended to, the disease may be removed by frequent and copious irrigation.

SUN-SPURGE. See WARTWORT.

SUPPER is the evening refreshment, or the last meal which is usually taken, shortly before retiring to rest.

Since late dinners have, within these few years, become fashionable, suppers are in a great measure relinquished; but, as many persons still retain the latter practice, it should be remarked, that all flatulent and heavy food ought to be avoided; for, as digestion is more slowly effected during sleep, the stomach will become oppressed, and often troubled with nausea, eructations, accompanied with head-ach, &c. in the morning, consequent on excess in eating. Where, however, a *healthy* person is obliged to labour at the desk, or in any other sedentary manner, during the greater part of the night, it will be advisable to take a slight repast, such as bread-pudding, water-gruel, or milk with biscuit, toasted bread, and the like, at least one or two hours previously to BED-TIME. Nevertheless, to *convalescents*, it may, under certain circumstances, be allowable to eat an egg, or partake of a few oysters, or similar shell-fish, that afford a more solid nutri-

nutriment than any of the dishes before mentioned; provided they agree with their digestive organs.

SUPPURATION. See **ULCER**.

SURFEIT, in physiology, is an indisposition attended with nausea, and the sensation of a load at the stomach, which are generally occasioned by indolence, and excess in eating or drinking; though the disease sometimes arises from an error in the quality of the diet. During this affection, the insensible perspiration is impeded, and the skin is often covered with eruptions.

If a surfeit originate from the use of muscles, corrupted meat, or other unwholesome animal food, it will be advisable speedily to resort to an emetic; and, after its operation, to drink frequent and copious draughts of vegetable acids, diluted with water. But, in cases where *excess* in eating or drinking is the immediate cause of the complaint, the first passages ought to be evacuated by proper purgatives, and afterwards such medicines administered as tend to restore the obstructed perspiration, and at the same time promote the secretion of urine.

SURFEIT, in farriery, a disease chiefly incident to horses: it may be occasioned either by suffering them to drink immoderate portions of cold water, while they are in a profuse perspiration; or by neglecting them, when **HIDE-BOUND**. In both cases, the whole mass of the fluids becomes tainted; the skin is affected with eruptions; and (as farriers express themselves), the body is filled with inflammatory crudities.

Such are the general symptoms indicating a *surfeit*, the mildness or malignity of which, depends on

the age, habit, and constitution of the horse. With a view to remove the disease, a moderate quantity of blood should first be drawn, in order to accelerate its circulation: a few warm mashes should next be given, to open the body; and after them, two or three of the following purgatives, according to circumstances: Let one ounce of Barbadoes aloes; three drams of pulverized jalap; two drams of cream of tartar; and a similar portion of Castile soap, calomel, and ginger in powder; be mixed with syrup of buckthorn, sufficient to form them into a ball.—These medicines ought to be divided into three doses, administered at proper intervals; the diseased animal being carefully sheltered from the cold; and, on the third day after the last dose has been taken, Mr. TAPLIN recommends the following alteratives:—To half a pound of levigated antimony, and an equal portion of sulphur, let four ounces of each, cream of tartar, and Æthiop's mineral, be added; the ingredients be perfectly incorporated, and then divided into twelve parts, each consisting of two ounces: one dose should be given every night with the corn (the latter being previously sprinkled with water, so as to retain the powder), for a month; and, in case no advantage be perceptible, the dose must be increased to 2½ oz. during the first week, and to three ounces in the second week. Throughout the whole course, two ounces of nitre ought to be given every morning, in a pailful of soft water. Should any scabs or excoriations appear on the surface of the body, they may be removed, by washing them with equal parts of soap-leys and lime-water.

SURGEON, or **CHIRURGÉON**,

III

an appellation bestowed on professional characters who exercise that branch of the healing art, which chiefly relates to the treatment of external or local affections. In latter times, however, the practice of surgery is more extensive, and likewise more respectable; since its professors have been finally separated from the Company of *Barbers*, whose mechanical pursuits are now confined to blood-letting, teeth-drawing, and shaving. The two former operations, however, are also performed by surgeons, on scientific principles; so that the lower classes, and country-people, only resort to the barber.

At length, the wisdom of the British legislature, has granted to the honourable profession of surgery a royal charter, by virtue of which, all examined and approved members, on paying certain fees, may be incorporated in the Royal College of Surgeons of London, established in 1800.

With respect to the duties of a *Surgeon*, we refer to the article *PHYSICIAN*, and decline the task of pointing out those cases of complicated internal diseases, in which the latter may be preferably consulted. And, though it must be admitted that the separation of these two professions has been, and ever will be, detrimental to the progress and interest of medical science; yet, on the other hand, some distinction appears justly to prevail in the *present* state of things; as, otherwise, there would be no occasion for physicians, or they would be compelled to employ the knife and the lancet.—Such an expedient, however, might be the means of encroaching on the practice of surgeons, who have devoted their attention to the heal-

ing art, both in external and constitutional complaints: Hence, we are of opinion, that it would be highly beneficial to society, if both professions were again united, as they have originally been in the days of the greatest practitioner of antient and modern times, namely, those of *HIPPOCRATES*.

Lastly, the present surgeons, who have devoted themselves to the practice of medicine, in general, seldom dispense *drugs*, but prescribe them to be prepared in the public shops; thus enjoying and deserving all the prerogatives of the most respectable physicians, excepting those privileges which are merely *nominal*: on the contrary, the *surgeon-apothecaries*, who distribute their own medicinal preparations, and in a manner combine the *three* branches of the profession, together with *midwifery*, are entitled only to the exemptions stated under the head of *APOTHECARY*.

SUSPENDED ANIMATION. See *ANIMATION*.

SUSPENSION BY THE CORD, or HANGING, is either the act of suicide, or that of being suffocated, by means of a rope tied round the neck; in consequence of which, the vital principle is extinguished.

As many persons unfortunately perish, who are from various causes induced to resort to this fatal expedient, we shall briefly state the symptoms, or external signs, by which it may be ascertained, whether they died in consequence of strangulation; and also point out those remedies which have been suggested for the recovery of life.

Symptoms of apparent death, by suffocation with the cord:—The external aspect somewhat resembles that of drowned persons; the face

face is uncommonly swoln, and of a deep red hue; so that every feature is distorted: the eyes are inflated, and project from their sockets; a bloody froth appears at the mouth; all the vessels of the neck and face are distended; and swallowing is totally impeded.

Treatment:—1. The cord must be instantly cut; the suspended body being gently taken down, every ligature ought to be removed; the head should be supported in an erect posture, and turned towards the left side. 2. Air must be blown upon the face, which should also be sprinkled with cold water. The gullet ought to be stimulated by a feather moistened with oil; and vinegar be applied to the nostrils, while the regions of the heart and throat are gently compressed. Farther, the patient ought to be wrapped in warm flannel, or placed between feather-beds; and a bladder, filled with tepid water, applied to the pit of the stomach: the whole body may also be fomented, or immersed in the luke-warm bath.

Stimulants:—1. Moderate friction with warm flannel, to be gradually increased on the left side. 2. The shower-bath, combined with friction. 3. Stimulating clysters, consisting of salt-water and oil: none of these remedies, however, must be resorted to, where the blood appears to be determined towards the heart and head.

As soon as the first symptoms of resuscitation become evident, the blowing of air into the nostrils, and aspersion of cold water on the face, ought to be continued: next, clysters, consisting of a strong solution of emetic tartar, ought to be administered; and the sugillations, or injured parts, be fomented with

wine, in which chamomile flowers have been infused. Lastly, when the ability of swallowing is restored, the patient should take frequent draughts of vinegar diluted with cold water, and mild, cooling laxatives.

SWALLOW, the **COMMON**, or **CHIMNEY-SWALLOW**, *Hirundo rustica*, L. a well-known bird of passage, appearing in this country about the middle of April, and generally departing early in October. This bird constructs its nest, about the middle of May, in the upper part of chimnies. The female deposits from 4 to 6 white eggs, spotted with red, producing her first brood about the latter end of June, or beginning of July; and the second in August.

Swallows delight to skim along avenues, extensive walks, under hedges, pasture fields, and mown meadows; because, in such situations, flies and gnats generally abound. They also frequently settle on newly-ploughed gravelly soils, particles of which they instinctively swallow, for promoting the digestion of their food. These birds are caught, and sold as food, in the markets of France, Spain, and Italy; but not in Britain. By the myriads of insects which every single brood of swallows destroys in the course of a summer, they, in a great measure, defend mankind from the annoyance of flies, gnats, &c. Farther, by devouring multitudes of vermin, either in the grub, or winged state, which would otherwise render the labours of the husbandman abortive, the breed of these birds ought, by every possible means, to be encouraged.

It is remarkable, that some species of these useful creatures retire to warmer climates, while others remain

remain during the winter at the bottom of swamps and morasses, in a torpid state, till they are recalled into life by the genial warmth of the vernal sun.

SWALLOWING, or **DEGLUTITION**, is the act of taking any food, whether solid or liquid, down the throat. It succeeds **MASTICATION**, and is performed primarily by the tongue, which propels the aliment into the gullet; whence, by the contraction of the muscular parts, the contents are conveyed into the stomach.—See also **DIGESTION**.

Deglutition may be impeded or obstructed by various circumstances, such as swellings in the throat, or the taking of acrid, pungent, or pointed substances into the mouth: but, as the most simple and expeditious remedies for such affections have already been pointed out, the reader will consult the articles **GULLET**, **GARGLE**, **QUINSEY**, **METALLIC Pointed Substances**, &c.

SWALLOW-WORT, the **COMMON**, or *Asclepias alba* v. *Vincetoxicum*, L. a hardy exotic plant, which is a native of the south of France, Spain, and Italy. In a fresh state, the root of this vegetable possesses a strong smell, resembling that of valerian; to which, however, it is inferior in its sudorific and diuretic properties.

The stalk of the Common Swallow-wort is fibrous, and has on the Continent been employed as a substitute for *flax*: by mixing it with silk, **M. DE BIBORCZFALVA**, a creditable economist in Hungary, has lately produced a mixed cloth, which was remarkably fine, and cost him about 4s. the yard, English measure; being from 50 to 60 inches wide.

There is another species of this exotic, namely, the Syrian Swallow-wort, or Silk-plant (*Asclepias Syriaca*, L.) a native of North America, and especially of Virginia. Its strong stalks attain the height of seven feet: the pale purplish flowers appear in June or July; emit an agreeable odour; and are succeeded by large, thick, and rough capsules, the seeds of which are furnished with a long, glossy *silk*. In this respect, it forms one of the most valuable productions; and, as the experiments lately made in Silesia, fully evince that it may with equal advantage be raised in the more temperate climate of Britain, we strongly recommend its culture, which is generally successful in the most indifferent soils. It may be propagated either by the seeds or roots; vegetating most luxuriantly in a loose, sandy, and rather damp, ground. The seed should be sown in the spring, and the young plants be transplanted into a well-ploughed and manured land, where they must be properly weeded in the succeeding summer; and hoed, after having attained the height of 3 feet. When the principal stem displays the flowers, all the collateral branches and leaves should be carefully removed. The fruit attains to maturity in August, or September; and, as soon as the external rind becomes soft, yellow, and wrinkled, the seed capsule is to be cut off during dry weather, and allowed to burst spontaneously. The dry stalks are next to be separated by the knife, applied closely to the root; the decayed plants must be re-placed by the roots of others; then thinly covered for the winter with long dung; and, in the succeeding spring, the surrounding earth should be

be loosened. Although BECHSTEIN, who has furnished us with this account, does not mention the distance at which the plants ought to stand; yet their size appears to require considerable space, so that they may be, at the least, 12 inches apart, in every direction. The silk, obtained from the seed-capsules of the Syrian Swallow-wort, is not only useful for stuffing pillows, spinning fine yarn, both by itself and mixed with cotton, animal wool, and cod-silk, or the loose filaments of the cocoons; but it also affords a valuable material for manufacturing paper of a superior quality. Its stalks may be advantageously employed as substitutes for hemp. In Canada, a brown sugar is extracted, by evaporating the juice of its flowers; and, in Germany, the young tops are eaten as *asparagus*: hence, the assertion of some naturalists is erroneous, that the milky juice of this plant is of a poisonous quality.

SWAN, or *Anas cygnus*, L. an elegant bird of the goose kind, but much larger, and having a longer neck: there are two varieties, namely:

1. The *ferus*, Wild, or Whistling-Swan, a bird of passage, which frequents the British coasts in hard winters, but does not breed: it is about 5 feet in length; its body is white; it has a black semi-cylindrical bill, and utters a remarkably shrill note. This variety abounds in North America, in Asia, and in the northern parts of Europe, where great numbers are caught by the inhabitants, to whom they afford a wholesome food: their eggs are very nutritious, and the skins and feathers furnish a warm clothing, especially for muffs.

2. The *mansuetus*, Tame, or

Mute Swan, is (next the Bustard) the largest of the British birds; being upwards of 5 feet in length, and distinguished by its *hissing* noise. The bill is red, but the tip and sides are black: in young birds, the plumage is of an ash-colour, till the second year, after which it becomes perfectly white. The tame Swan is equally remarkable for its longevity, attaining frequently the age of 100 years, as well as for its uncommon strength; for instances have occurred, in which it has overpowered, and severely beaten, young people, 16 years of age. The female of this variety lays 6 or 8 eggs, in the month of February, which she hatches within six weeks. The flesh of the tame swan is very wholesome, and, in ancient times, formed a dish at every feast: at present, however, the young birds, or *cygnets*, only are eaten; considerable numbers being fattened about Christmas, at Norwich; where they are sold, at the exorbitant price of one guinea each.

Lastly, it was anciently believed that the swan, shortly before its death, sings in harmonious strains; but such error has probably originated from observing the flight of these birds of passage, producing agreeable tunes, by the regular motion of their wings.

SWARD-CUTTER, a machine employed for cutting the sward, or surface of the earth, so as to break every clod that might otherwise resist the action of spiked rollers, or any similar implement of agriculture.

In the *Letters and Papers of the Bath and West of England Society*, we meet with an account of a Sward-cutter, invented by the Hon. ROBERT SANDILANDS, and which

thick at E; but which decrease to 3 inches at F. In these bulls are fixed six iron cutting wheels, which are 13 inches in diameter; $\frac{1}{2}$ of an inch thick at the centre, for the reception of holes, containing the iron axis; and which are of such a thickness from that part, as to admit of the edges being *well steeled*. Farther, such wheels are fixed by means of two bolts, that pass through the bulls, having eyes at one end, for the motion of their axles; the opposite extremity being provided with nuts and screws, which are sunk in the bulls, to prevent them from interfering with the weights that rest on them; and these are marked with the letters, L, L, L, L, L, L, L, L, in the respective figures above delineated.

G, G, G, G, G, G, are seven *thorles*, or hollow pieces of wood, each being $3\frac{1}{2}$ inches in length, and inclosing the bolt, M, M, while they serve to keep the bulls, C, C, C, C, C, C, at proper distances. These *thorles* consist of two parts, being connected by means of a cord or leather strap, that admits of their being changed, when it becomes necessary to enlarge or diminish the cutting wheels: they may also be made shorter, or longer, as the sward requires to be cut in larger or smaller pieces.

M, M, is an iron bolt, that passes through two pieces either of wood or iron, seven inches in length, clear of the wood, which are supported by iron stays fixed to the frame; and run through all the bulls, as represented at T, (Fig. 3).—Such bolt ought to be very strong, as the draught of the horses there terminates.

H, H, (Fig. 2, and 3), represents a wooden cylinder, termed a *rocking-tree*, which is seven inches in

diameter, extends across the frame, and moves on two pivots, inserted in the latter; one being fixed at each extremity.—This cylinder is not described in Fig. 1, in order to convey a clearer idea of the frame: it is supported by an iron bolt, or piece of wood mortised into the frame (as delineated in the figures above referred to), that is eight inches in height, and to which six chains or ropes are attached by hooks, at various distances; accordingly as the *cuts* may be required to be 6, 7, 8, or 9 inches asunder. Farther, the chains or ropes are joined to the end of each bull, in which the cutting wheels move; so that, when the *rocking-tree* is turned about by the lever I, all the bulls are, together with their wheels, raised uniformly out of the ground, as delineated in Fig. 3; by which expedient the implement may be turned from one place to another, without any danger of straining the wheels.

L, L, L, L, L, L, L, L, (Fig. 1, 2, and 3), are weights of freestone, which are 26 inches in length, and 6 inches in breadth; the lower stone being 4 inches thick, and weighing about 56 lbs.; the upper one is of similar dimensions, but 3 inches thick, and weighs about 42 lbs.: these stones are perforated with two holes, through which are inserted iron spikes, that are fixed in the bulls, with a view to keep them steady.—Mr. S. remarks, in his communication to the Patriotic Society above-mentioned, that the stone first described will be sufficient, when the ground is not very hard; but, where it cannot be cut without great difficulty, the stone weighing 42 lbs. may be added; so that every wheel may support a weight

weight of 98lbs. that has been found fully adequate to the cutting of the stiffest land, and the hardest sward, on which experiments have hitherto been made with the implement:—he farther observes, that *cast-iron*, if it were not too expensive, would be preferable to stone.

I, (Fig. 2 and 3), is a lever five feet long, which should be made of good, tough ash; and is connected with a sliding rope fastened to the back part of the frame; so that, when the *rocking-tree* is partly turned round by the lever, and the cutting wheels are consequently raised three or four inches above the surface of the land, the rope is fixed to it, by throwing a loop at the extremity of such rope over the pin R, (Fig. 2, and 3), at the distance of three feet four inches from the end of the lever I. Thus, all the wheels are kept above ground, till the Sward cutter is turned; when, on removing the loop from the pin, the rope or chain slips towards the frame, and the lever is gradually returned to its former position, as appears in Fig. 2; so that the cutting wheels are restored to their first situation, by the weights fixed to the bulls.

P, P, (Fig. 1), are small iron bolts, having hooks at one end, in order to strengthen the bolt M, M, and being fastened to the frame by nuts and screws.

The hinder part of the grooves may be covered below with a thin plate of iron, which is six inches in length, three in breadth, with a slit in the part where the wheels move; in order to prevent such grooves from being filled, and consequently the wheels from being clogged or impeded with grass, weeds, or small stones. The form of such

plate, together with the slit, is delineated in the small figure marked with the letter i.

The machine represented in Fig. 1, is furnished with three shafts, resembling those of a waggon, and which are designed for a *Double-horse Sward-cutter*: they may be made of such length, strength, and proportion, as the workman may think proper. Mr. SANDILANDS recommends an implement of this size to be provided with *eight* bulls, and an equal number of wheels; so that, when it is designed to reduce hard *cloddy* summer fallows, or to prepare land for barley, either *before*, or *after* the last furrow, the whole weight (amounting to forty-two stone, or 589 lbs.) may be applied to the bulls, which should in this case be six inches asunder: hence the stones, weighing 56lbs. each, are to be laid on six of these bulls; and two of those, weighing 42lbs. each, on the two additional ones; the whole forming a weight, which is conceived to be fully adequate to the purpose, and which will effectually crush every clod of a breadth exceeding six inches.

A *Single-horse Sward-cutter* is furnished only with four cutting wheels, and one pair of shafts; the latter of which may, without requiring any joinings, form the two sides of the frame. Its width, compared with that of the implement designed to be drawn with *two* horses, is in the proportion of four to six; and, if it be intended for cutting tough soils, it may be furnished with *six* bulls, and 28 stone weight, being divided in the following manner, namely: the 56lb. weights (that is, the four larger stones) being applied to four of the bulls; and two of the 42lbs. weights,

weights, or the smaller stones, to the two additional bulls.

With a view to procure the Sward-cutter at the lowest price, Mr. SANDILANDS proposes to save the expence of the two wheels and iron axle, by fastening to the frame at S, (*Fig. 3*), a piece of wood having a small curve at the end, and somewhat resembling the foot of the sledge formerly used in Scotland, for the purpose of carrying corn from the field; that part of such piece, which rests on the ground, being retained at the distance of 18 inches from the frame, by means of a strong wooden prop. Lastly, as the outer or side-bulls are apt to slide beneath the frame; and, as it would thus be difficult to raise the cutting-wheels when in the ground, he recommends a thin slip of iron to be fixed in the inside of the frame, nearly opposite to the hinder extremity of the bulls, and of a sufficient length; by which expedient such inconvenience will be completely obviated.

In employing this Sward-cutter, one man only is required to manage the machine, and to drive the horse, or horses; accordingly as one or two of those animals become necessary. He commences his labour, first by measuring out the space of 20 or 30 paces from the implement, at the end of which he fixes a pole. The field is next cut across, as nearly at right angles with the ridges as possible; and, when the cutting-wheels have passed the last furrow of such space, about a yard, the labourer must stop the horses, and take hold of the lever I, (*Fig. 2*, and 3): this he pulls towards him; raising the cutting-wheels out of the ground, which are then kept elevated by throw-

ing the loop of the rope over the pin R, (that is inserted in the lever I, *Fig. 2*, and 3), till the implement be turned, and brought to its proper place; which is effected by measuring out a similar distance on the *opposite* side of the field. When the cutting-wheels are directly over the last furrow, the horses should be stopped; the loop slipped off the pin R; and the lever be restored to its former station, as represented *Fig. 2*; in consequence of which the weights, L, L, &c. are again enabled to force the cutting-wheels into the ground. In this manner the workman proceeds to conduct the machine, till the field is regularly cut; after which the soil may be ploughed and harrowed in the usual manner.

The original design of the Sward-cutter, was that of preparing *old grass land* for the plough, by cutting it across the ridges, either at the commencement, or in the course of the winter; to which purpose it is eminently adapted. While other ploughs are liable to be injured, or at least *thrown out of work*, by stones or any other obstruction between the coulter, no such accident can happen to Mr. SANDILANDS' machine; though consisting of four, six, or eight cutting-wheels; because these are independent of each other, and divide the ground across the ridges, previously to ploughing; thus rendering that operation much easier to *two* horses, than it would otherwise be to *three*.—The furrow being cut transversely, “falls *finely* from the plough,” in squares of any size that may be deemed proper; whereas, if a *scarificator*, a four-coulter, or other plough, were employed, long slips of tough sward

would be formed, and which are seldom, or at most imperfectly, broken.

Farther, the *Sward-cutter* will be of great service in preparing land for barley, as it is preferable to any spiked or cutting roller; and for reducing the large hard clods occasioned in clayey soils by a sudden drought, when these have been ploughed before the superfluous moisture had evaporated. Other advantages attending the use of the machine here described, are the celerity and facility with which the labour may be performed; as one implement will cut, in the course of a day, as large a space as would require six *ploughs* to turn the soil: the work is executed not only in a *neater* manner, but a greater surface is exposed to the influence of the air and sun; so that the soil is considerably ameliorated. Besides, it deserves to be noticed, that it is of no consequence, whether the land to be *sward-cut* is in crooked or straight, in flat or high-raised ridges; in short, let the surface be ever so irregular, the effect will be uniformly produced on level, as well as uneven ground; because the cutting-wheels, acting *separately*, are forced by their incumbent weights into every cavity or furrow. The price of this valuable implement was originally 15 or 16l.; but, from the improvements lately made by its inventor, we understand that it may be procured for 5 or 6l. Mr. SANDILANDS observes, that any common wheelwright, or blacksmith, may make the instrument: as it is very strong; simple in its construction; easily managed, and removed to different places; and, if carefully kept under shelter, when not in use, will last for many years; we

have been induced to explain its constituent parts, for the information of our country-readers; happy, if we could thus contribute our mite towards the improvement of that national concern, AGRICULTURE.

SWEARING, a term used to denote either the uttering of impious expressions, or the judicial, and also official invocation of the Deity, to attest the truth of an assertion.

The security of *oaths* in important affairs, has in all ages been required by the laws of civilized nations; nor is *swearing*, on such occasions, prohibited by the Christian doctrine. But, though particular circumstances may sanction this expedient, there is no possible excuse for invoking the Creator, to attest the truth of every trifling transaction, or to witness the impertinence of idle, perhaps indecent, conversation. It has been urged, by way of extenuating this breach of *morality*, that a man may have been carried away by the violence of some passion; or he may probably have been aggravated by the gross misconduct of others. Such plea, however, cannot lessen the criminality of the act: for the utterance of a profane oath neither imparts pleasure to, nor dispels the uneasy sensations of, the speaker; while the wanton indulgence in such *practice* displays a wilful propensity to vicious habits, incompatible with the dignity of rational agents.

Sensible of the bad and *contagious* effects of swearing, our legislators have wisely directed certain penalties, from 6d. to 2s. 6d. (or corporal punishment), to be paid for every such violation of the law of *decorum*; which, however, are seldom

seldom enforced; nor will our lips permit us to detail them.

SWEAT, a perceptible moisture, issuing from the pores of the skin, either in consequence of too violent exercise, or from the action of certain medicines, which are hence denominated *sudorifics*; though it is sometimes occasioned by great debility of the cutaneous vessels, when it is called a *cold sweat*.

Sweats seldom occur in healthy individuals, excepting from some defect or mismanagement of their diet, regimen, &c.: if excessive, they are always hurtful; on account of their drying and weakening the body; depriving the humours of their aqueous parts; and disposing the system to inflammatory diseases. In certain cases, however, when artificially excited, such secretion is productive of beneficial effects, as in palsy, rheumatism, dropsy, and other chronic complaints. Sometimes, sweats are *critical*, in particular disorders; Nature exerting herself, by the outlets of the skin, to discharge morbid matter: in these, and indeed in all such instances as are not attended with dangerous symptoms, they ought to be promoted; and, on no account, to be suddenly or rashly suppressed; for head-achs, cutaneous eruptions, catarrhs, together with inflammations, and numerous other affections, are frequently induced by neglecting this salutary evacuation.—See also **PER-SPARATION**.

SWEATING-SICKNESS, an epidemic which raged in England in 1481, and returned seven times between that period and 1551; in which year it proved so fatal, as to carry off 120 inhabitants of Westminster in one day. It commenced with a most profuse fit of sweat-

ing, which attacked the patient, and often terminated his existence in one, two, or three hours; though its violence continued for the space of 15 hours; and, if he survived 24, the danger was generally overcome.

The most correct account of this national scourge, is that published by Dr. CAIUS, who states the symptoms to have been, a sensation of a hot vapour pervading a particular limb, whence it extended over the whole body, being accompanied with intense thirst; extreme internal heat; profuse sweating; anxiety; drowsiness; sickness; a violent pain in the head, and delirium.—Dr. C. conjectures the immediate cause of this sickness, in 1551, to have proceeded from thick fetid fogs, that arose from putrid matters; unclean habitations, and the neglect of clearing drains; all which remarkably contaminated the air. In order to prevent a return, he directs a strict attention to cleanliness, abstemious living, and free exposure to the air; in case the contagion be suspected, it will be advisable to kindle large fires contiguously to the house, and to burn aromatic substances, frequently inhaling them by the nostrils. With respect to the *cure*; the sweat being *critical*, he advises the patient to lie down, without changing his clothes, to be covered closely, and to avoid the least motion. After the first five hours, he may take a little wine and water through a spout. At the expiration of the fourteenth hour, the bed-clothes should be gradually removed; the sweating restrained; and, after 24 hours, some light food may be administered.

Such ought to be the treatment, when the sweat is *spontaneous*: in
N 2 the

contrary case, it becomes necessary to resort to warm and dry friction: draughts of generous wine, together with Mithridate or Venice-treacle, aromatics, and similar sudorifics, ought to be given. By this management, if judiciously adapted to circumstances, the disease may be removed, even under the most alarming symptoms.—It is, however, remarkable, that the persons most liable to the contagion, were those in full health, of middle age, and of the higher classes; while children, the poor, and the aged, were less subject to its influence.

SWEET-BRIAR. See vol. iii. p. 506.

SWEET-FERN. See CICELY, the Sweet.

SWEET-FLAG. See FLAG, the Sweet.

SWEET-WILLIAM. See vol. iii. p. 385.

SWEET-WILLOW. See GALE, the Sweet.

SWIMMING, is the art of floating, or supporting the human body on the surface of water, with a progressive undulating motion.

This art is in a manner natural to man (see AMPHIBIOUS ANIMALS); and, from its evident utility, it has in all ages formed part of the education both of barbarous and civilized nations.—As an outline of the principles on which it is practised, may be a mean of saving persons accidentally fallen into deep water, we shall give a few directions to that effect, selected from the instructions of Dr. FRANKLIN, and confirmed by our own experience. First, the learner ought to walk courageously into the water, till the fluid reaches to his breast; when he must gently de-

cline his belly towards the surface; the head and neck being erect; the breast pressing forward; the thorax being inflated, and the back bent. Next, the legs must be withdrawn from the bottom, while they are extended or stretched out; and the arms should be stricken forwards, corresponding with the motion of the former.

Swimming *on the back* is not essentially different from the method just described, excepting that the arms are *not exerted*, and the progressive motion is derived solely from the striking of the legs.

With respect to *diving*, or plunging under water, Dr. F. observes, that the swimmer must close his hands together; and, the chin being pressed upon his breast, he ought to make an exertion to bend forwards with energy: while he continues in this position, he should move with velocity under the water; and, when he wishes to return to the surface, it will be sufficient to bend his head backward, in consequence of which he will instantaneously rise.

From the natural timidity, or antipathy to water, which in some individuals is constitutional, novices in swimming have been advised to employ bladders or corks, for the purpose of supporting the body above the surface; a practice which has been severely censured. Dr. F. is, however, of opinion, that such auxiliary means are *useful*, while the pupil is acquiring the mode of drawing in, and striking out the hands; which is absolutely necessary to a progressive motion. But, as no person can become a perfect adept, till he can sufficiently confide in the capacity of the water to support him, he ought to walk into
a place,

a place, where it grows gradually deeper, till it reach to the breast: the face must then be turned towards the shore, and an egg be thrown into the water, to such a depth that it can only be obtained by diving. The novice is then to plunge down, when he will find that the element buoys him up against his inclination: he will feel its power of keeping him afloat, and consequently learn to venture into it, without apprehension.

Considered as an exercise, Swimming is equally amusing and useful; because it combines the advantages of the cold bath and muscular exertion. Hence we would uniformly recommend to plunge into the water *with the head foremost*; while the body is neither cold nor overheated: no dangerous rivers, or muddy streams, should be selected; nor should this attempt be made, till the water has in some degree been warmed by the genial rays of the sun.—Other precautions, necessary to be observed, having already been stated under the article BATH, we refer the reader to vol. i. pp. 186-68.—See also BAMBOE-HABIT, and CORK.

SWINE. See HOG.

SWINGING, a species of passive exercise, which is performed in certain contrivances, known under the name of *swinging machines* or *cars*; by the undulating motion of which, the body is tossed in an ascending and descending direction.

Swinging greatly contributes to health; and has occasionally proved very serviceable to persons of consumptive habits: it is likewise of considerable advantage to sedentary individuals; but it ought not to be repeated, if it excite giddiness, headache, or other unpleasant effects.

SWOON, or *Syncope*, is a sud-

den fainting, in which the action of the heart is diminished, or for a time entirely suspended. It is generally preceded by anxiety, difficult respiration; the pulse being low and tremulous; the patient turning cold and pale, so that he is nearly deprived of all sensation.—In some instances, these symptoms are more urgent; the limbs are flexible, but exhausted of their strength; and the whole body is in a state of deadly, cold torpor. It is remarkable, that patients, during the fit, often hear the whole conversation respecting them, but feel the want of power to exert themselves: the recovery is, in most cases, announced by deep and heavy sighs.

When swooning occurs in the commencement of acute disorders, it is generally an unfavourable omen; though, in the advanced stages, it is less alarming: in violent bleedings, it frequently affords relief; but, when faintings occur, without any apparent cause, there will be just apprehension of danger.

Causes:—Long continued exertions of the mind, such as deep study; violent passions; loss of strength from profuse evacuations, particularly of blood; hunger; pain; want of rest; surfeits; impure air; worms; narcotic poisons; and affections of the interior organs.

Cure:—The patient should immediately be exposed to the open air, and be sprinkled with cold water on the neck and face. Strong, pungent odours, or volatile spirits held to the nostrils, ought to be used with caution; and only where the strength of the patient has been considerably reduced, especially in hysterics and hypochondriasis; in these cases, spirit of hartshorn, tincture of valerian, castor,

tor, or asafoetida may be inhaled with advantage.—If the swooning originate from anger, and be attended with nausea, vomiting, bitter taste, and pain at the pit of the stomach, a gentle emetic may be given, with copious draughts of warm chamomile tea: similar means may likewise be employed, in consequence of a surfeit.—Persons of a plethoric habit, when fainting from violence of passion, ought immediately to lose a few ounces of blood from the arm; and afterwards take a cooling aperient, for instance, infusions of senna, tamarinds with manna, salts, &c. If it arise from excess of pain, benefit may be derived from opium; and, when it is occasioned by a fit of terror, or a sudden fright, first blood-letting, then small doses of laudanum and antimonial wine (from five to ten drops of the former, and double that proportion of the latter), will tend to compose the nerves, and to promote perspiration.—Poisons and worms require the treatment mentioned under their respective heads.—When the fit of swooning is the effect of too violent purgatives or emetics, a few drops of the tincture of opium, in conjunction with an aromatic wine, will prove the most proper remedy.

In cases of great debility, it will be necessary to abstain from all stimulating food or drink, and to use the mildest astringents, in combination with a bland and nourishing diet. During the paroxysm, frictions of the extremities with hot flannels, will greatly assist the recovery of the patient.

Should, however, this state of suspended ANIMATION, be the effect of LIGHTNING, SUFFOCATION,

SUSPENSION, &c. the proper means of resuscitation will be found in these respective articles.

SYCAMORE-TREE, or **SYCAMORE MAPLE**; *Acer Pseudo-platanus*, L. a large and beautiful tree, supposed to be a native of Germany, but reared in Britain, principally for the sake of its elegant appearance in plantations.—It is of quick growth, though increasing in size till 200 years old, and attaining the respectable age of four centuries: it flourishes in exposed situations near the sea, where a plantation of these trees, at 50 feet asunder, interspersed with three sea-sallow-thorns between every two of the former, makes an excellent fence against the spray of the ocean. The sycamore, however, thrives most luxuriantly in a loose black earth; and the young trees ought to be transplanted at the age of 15 or 20.—Its wood is soft and white, readily works in the lathe, and is employed by turners, for manufacturing wooden bowls, dishes, trenchers, &c. When the sap rises in the spring, or retreats in the autumn, a considerable quantity of sweetish juice exudes from a hole made in the trunk, about 12 inches from the root, amounting daily to 7, 8, or 10 quarts from each tree. The Highlanders convert this liquor into an agreeable, and wholesome wine: when clarified, evaporated, and subsequently inspissated, it affords a fine, white sugar (in the proportion of one pound from 16 quarts of the sap); which, however, is too purgative for common use.—There are two varieties of this tree, one having broad leaves and large keys, while those of the other are variegated: the latter is propagated chiefly

chiefly by inoculating and ingrafting; as it seldom produces perfect seeds.

SYLLABUB, a palatable compound drink, usually prepared by combining three parts of new milk and one of white wine, in which a sufficient portion of sugar has been previously dissolved.

Whipt Syllabub consists of half a pint of Rhenish, or other white-wine, and one pint of cream, to which are added the whites of three eggs. The whole is sweetened with sugar, and beaten with whisks till a froth appear; which, being taken off as it rises, is put into a vessel; and, after standing for two or three hours, it settles, and becomes fit for use.

This liquor is frequently used during the summer; and, if taken with moderation, it affords a cooling, agreeable, and very nourishing beverage.

SYMPATHY denotes an union or agreement of affections and inclinations; or a conformity of natural qualities, or temperaments; in consequence of which two persons are mutually attached to each other. It also signifies the participation in pain or pleasure experienced by another individual; though it is likewise defined to be an *imitative* and *involuntary* faculty; for instance, yawning, and laughing, which affect different persons in a similar manner, and at the same time.

Dr. JACKSON considers *Sympathy*, as relating to the operations of the mind; to the activity of the imagination; and to the impressions made on the external senses. Thus, he observes that the various *passions* and *affections* of the mind produce different corresponding sensations in the body, and gene-

rally determine the animal spirits to those parts which are most liable to be influenced; for instance, fear and anger to the heart; compassion, amazement or wonder, sorrow, joy, &c. to the head.

Another proof of sympathy is the participation in the feelings of others, whose propensity to mirth, or gravity, or to sadness and melancholy, is in a manner contagious to whole companies.

The operations of the *imagination*, however, as connected with sympathy, are chiefly confined to the body, and, in general, influence only persons of weak minds; hence arise many of those monstrous deformities occurring in the metropolis, but which might have been obviated by a proper exertion of reason, before the fancy was too much excited by the most seductive faculty, namely, that of *vision*.

The *senses* receive a sympathetic impression from odious or disgusting objects. Thus, disagreeable sounds *set the teeth on edge*, and produce an universal tremor or shivering: the taking of nauseous draughts, or other drugs, occasions a shaking of the head and neck. Similar effects arise from unpleasant odours; and, if a person suddenly withdraw from the sun into the shade, or from a light place into a dark room, an inclination to shudder will be the immediate consequence.—Those readers, who are desirous of obtaining farther explanations of these ideas, will derive instruction from the perusal of Dr. JACKSON's *Treatise on Medical Sympathy*, (8vo. 5s.)—Some ingenious conjectures on this subject also occur in Dr. ADAM SMITH's *Theory of Moral Sentiments*.

SYRUP, a solution of sugar, frequently employed as a vehicle

for various medicines; forming a sweet liquor, of a thick consistence, which is made by combining saccharine matter with water, vinegar, or the juices of vegetables.

Syrups were formerly considered as medicines of considerable efficacy; but, at present, they are used chiefly for sheathing, or concealing the taste of nauseous substances; yet, as there are certain drugs, which are peculiarly serviceable in this form, we shall give a few directions for preparing them: First, the vessels employed ought to be well tinned, and kept perfectly clean, lest any impure matters be introduced: the sugar should be doubly refined, and dissolved in a water-bath, in the proportion of 29 oz. to one pint of water, or any other liquid: the whole is then suffered to stand for 24 hours, when the scum must be removed, the syrup be strained, and poured into a vessel, where it remains till the following day. If any saccharine crust then appear, it ought to be taken off the surface, and the liquor will be fit for use.

Syrup of Vinegar:—Let 2½ pints of vinegar be boiled with 3½ lbs. of double-refined sugar, till

a syrup be formed. This solution is very pleasant, is often employed in mucilaginous mixtures; and, from its cheapness, is far preferable to the syrup of lemons.

Emetic Syrup consists of two drams of finely pulverized glass of antimony, and 12 oz. of Rhenish-wine: these ingredients must be digested in a gentle heat for three days, when the liquor ought to be strained through paper, mixed with double-refined sugar, and made into a syrup in the usual manner. This preparation is strongly impregnated with the emetic properties of the antimony, and is peculiarly calculated for children, on account of its agreeable taste.

Syrup of Lemon-juice:—Let five parts of double-refined sugar, and three parts of filtered lemon-juice be incorporated, so as to form a syrup. The juices of mulberries, raspberries, and black currants, may be converted into syrup in a similar manner: they are all cooling, pleasant liquids, and may be advantageously employed for mitigating thirst in bilious, or inflammatory disorders; and also for gargling the fauces, in cases of inflammation of the mouth and tonsils.

T.

TACAMAHACA, a gummy-resinous substance, obtained from the Carolina **POPLAR**. The best sort is collected from the fruit of the tree, in gourd-shells: it is somewhat soft and unctuous, of a pale-green, or yellowish colour, and a fragrant odour, resembling that of amber-

grease, or lavender. The drug commonly met with, in the shops, consists of variegated semi-transparent grains, procured from the sap exuding through incisions made in the poplar; and which are greatly inferior to the genuine species.

Tacamahaca is chiefly employed exter-

externally, for discussing tumors, promoting their maturation, and mitigating pains in the limbs; though the finer sort may be advantageously used for the same purposes, as other balsamics.

TALC, a species of fossil, found in England, Bohemia, Spain, &c. comprehending 3 varieties, namely:

1. The *Talcite*, or Scaly Talc, is dug in small light scales, which adhere to the fingers: it is white, intermixed with green; and, when rubbed on the skin, imparts a bright gloss.

2. The *Venetian*, or Common Talc, is also white, interspersed with green or red veins.

3. The *Schistose* Talc is of a slaty nature, and a grey hue, spotted with white, green, or blue; but, on exposure to the air, it becomes white and scaly.

This mineral is employed in preparing compositions for earthen vessels: on account of its smoothness, brightness, and unctuous quality, it has been celebrated as a cosmetic; and various unsuccessful experiments have been made, with a view to extract from it oils, salts, and other supposed ingredients.—When combined with alkaline salts, it is fusible in a strong heat, and forms a transparent, handsome, greenish-yellow glass; if equal portions of talc and of chalk be melted together with one-fourth part of borax, the mixture will produce a fine pellucid greenish glass, which is of considerable lustre and hardness: gypsous earths may also with advantage be substituted for the chalk, and the result will be a beautiful, pellucid yellow glass, of equal brightness and durability.—Talc is subject, on importation, to a duty of 2½d. per lb.

TALLOW, is the fat of certain animals, properly boiled and clarified. It may be procured from almost every creature, excepting worms and insects; though the best and largest quantities are obtained from bullocks, sheep, hogs, and bears.

Considerable quantities of tallow are consumed by salt-boilers, for the purpose of imparting a large grain to the salt: it is also used in the manufacture of soap, and particularly in making CANDLES. By the 7 GEO. III. c. 12 (continued by subsequent acts till 25th March, 1806), tallow, or grease, including lard, may be imported from any part of Europe, free of duty; provided it be regularly entered and landed; otherwise, it is subject to the charge of 10s. 1d. per cwt.

TAMARIND-TREE, or *Tamarindus Indica*, L. a native of the East and West Indies, of America, Arabia, and Egypt, where it attains the height of 30 or 40 feet.

The fruit of this tree resembles a bean-pod; is eight inches in length; and contains from 3 to 4 hard seeds, covered with a deep-brown viscid pulp, which is of a pleasant sub-acid taste. When taken in the quantity of from three drams to an ounce, this pulp proves a gentle laxative; at the same time alleviates thirst; and mitigates immoderate heat. Farther, it increases the operation of manna, and similar sweet purgatives, while it weakens the action of the more drastic, and especially of resinous, drugs: hence it forms an useful ingredient in various medicinal preparations.—Tamarinds pay, on importation, 2½d. per lb.

TANNING, is the art of preparing

paring leather from raw skins and hides, so as to render it more pliant and durable.

The processes employed for this purpose, are various; every tanner adopting some peculiar method: we have therefore selected the following, which is practised with little difference, in the metropolis and its vicinity; where the leather is divided into three sorts, known under the names of *backs*, or *butts*, *hides*, and *skins*.

The strongest hides are selected for the *butts*; and, after being divested of the horns, they are laid in heaps for one or two days during the summer, and for the space of five or six, in the winter. Next, they are suspended on poles in a *smoke-house*, or room containing a fire made of wet tan, to induce a slight degree of putrefaction, so that the hair may be stripped off; an object which is effected by spreading such hides on a wooden *horse*, and scraping them with a curved knife. They are then immersed in water, to be cleansed from all dirt, and extended a second time on the *horse*, when all extraneous matters must be carefully removed. The hides are now steeped in a pit containing *ooze*, or a strong liquor, prepared by infusing ground oak-bark in water; after which they are plunged into another pit, containing water powerfully impregnated with oil of vitriol, or with an acid obtained from rye or barley. They are next immersed in another pit filled with water; a stratum of bark being strewed between each hide. In the course of 5 or 6 weeks, the skins are taken out; and the water, together with the decayed bark, being removed, the pit is a second time filled with

ooze; the hides are again macerated, with similar strata between each, for three months. The same operation is then repeated a *third*, and, after the lapse of three months, a *fourth* time: here the hides remain for three months longer, at the expiration of which they are completely tanned; being thus drawn out, they are suspended on poles; when, after being compressed by a steel pin, they are beaten by wooden hammers, or *beetles*, to render them smooth; and then dried for sale.

The leather, known under the name of *hides*, is made from the skins of cows, and those of lighter oxen, in the following manner: The horns are first taken off, the hides washed and immersed in a pit full of lime-water, where they remain for a few days; after which the hair is stripped off, as above described. They now undergo various processes, similar to those already detailed, excepting that the *ooze* is not at first of equal strength; and that the hides are shifted every second or third day, for the space of six months, into a stronger liquor; being at length put into a very rich *ooze*, where they are turned twice every week, for two or three months. Thus prepared, they are carried to another pit, with layers of bark arranged between each hide; the process being again repeated for a similar period, when they are taken out, and treated in the same manner as the *butts*. Both species of leather here described, are employed for the soles of pumps, shoes, boots, &c.; being finer or stronger, as occasion may require.

The last division of leather is that of *skins*, which includes all that is manu-

manufactured from those of calves, dogs, &c. They are washed in water; then plunged in lime-water, and deprived of their hair by the same operation as *hides*; after removing all uneven and superfluous matters, the skins are soaked in a pit of water impregnated with the dung of pigeons, for a week or ten days, in order to extract all the particles of lime, grease, &c. Next, they are treated in a similar manner with the hides; and, in the course of five or six months, they will be sufficiently tanned.—The leather thus prepared, is now conveyed to the currier; and, after undergoing the process detailed, vol. ii. p. 110, it is used for the upper parts of boots, shoes, &c.

Such are the *old* methods commonly practised in tanning: these, however, being too tedious and expensive, various expedients have lately been devised, with a view to shorten the respective processes, and to procure substitutes for oak-bark. Thus, Dr. MACBRIDE proposed the use of vitriolic acid, instead of that obtained from vegetables; which, having been found very serviceable for distending the pores of the skins intended for *butts*, has been generally adopted by tanners; as it improves the leather in point of durability; and at the same time tends to facilitate or simplify the operations. He also recommended lime-water to be substituted for the common fluid, to promote the extraction of the astringent matter from the oak-bark; but, the former being very powerful, and apt to injure the texture of the leather, it is seldom employed.

Oak-leaves, gall-nuts, dried and

pulverized heath, the barks of the birch and willow-trees, the dried and powdered leaves of the wild laurel, and numerous other vegetable productions, have been tried, and proposed, as useful substitutes for oak-bark: numerous experiments were also made with plants, by GLEDITSCH, BAUTSCH, BÖHMER, and other writers; but, as we state the results of these in the progress of our work, it remains only to mention the following patents, among the multitude granted at different periods; namely: 1. The privilege obtained by Mr. SAMUEL ASHTON, in January, 1794, for his new method of tanning.—2. Mr. JOHN TUCKER's patent, dated in May, 1795, for a mode of tanning and making leather in a much shorter period, and of a superior quality, than can be effected by the common method.—3. Mr. WILLIAM DESMOND's, in January, 1796; for a process communicated to him (by M. SEGUIN), of tanning hides, &c. by rendering them more solid and incorruptible in water.—4. Mr. ROBERT CROSS's, in April, 1797, for a tan-pit on a new construction, and a method of tanning in one-half of the usual time, &c.—5. Mr. FRANCIS BREWIN's, in June, 1799, for an improved process of tanning hides and skins.—As the specification of these patents, however interesting to the tanner, are partly too diffuse, and partly of such nature as not to admit of abridgment, the curious reader will consult the 1st, 3d, 6th, and 11th vols. of the *Repertory of Arts*, &c. where full specifications are inserted, and occasionally illustrated with plates.—See also CURRYING, HIDES, LEATHER, SKINS, &c.

TAN-

TANNER'S-BARK, or TANNER'S WASTE. See **HOT-BED**; and **MANURE**, vol. iii. p. 160.

TANSY, the **COMMON**, or *Tanacetum vulgare*, L. an indigenous perennial, growing in elevated meadows and pastures, on the banks of rivers, and in swampy situations; flowering in the month of June.

This plant possesses a warm, bitter taste; it is deobstruent, not ungrateful to the palate; and may be used as a substitute for *hops*. The tender leaves are sometimes employed to impart a colour and flavour to puddings: according to **Dr. WITHERING**, its seeds are an excellent vermifuge; and, if any animal substance be rubbed with this herb, it will be effectually preserved from the attacks of the *flesh-fly*.—Tansy-tea is recommended as a preventive of the *gout*.—From the expressed juice of this vegetable, the Finlanders obtain a *green dye*.—The plant is eaten by cows and sheep, but refused by horses, goats, and hogs.

TAPE-WORM, or *Taenia*, is one of the most tormenting worms, breeding in the bowels of the lower animals, as well as of mankind, and consisting of several species, namely; the armed and unarmed; the long and short-limbed, or broad tape-worm; but that most frequently occurring in Britain, is the *solium*, which moves about, and has a regular round head, resembling a wart. It is from one, to twenty yards and upwards in length: the body is composed of a number of articulated rings, or joints, by which it attaches itself to the membranes of the intestines.

The symptoms by which the presence of this creature may be as-

certained, are those of worms in general, such as nausea; vomiting; giddiness; indigestion; colic; and flatulence: the patient feels a pressure in certain parts of the abdomen; which, on shifting its place, mostly produces a chilling sensation in the lower belly, or in the back. A more certain, and indeed the only criterion is, the expulsion of one or more pieces of the worm itself.

Cure.—An extraordinary number of remedies have been suggested, and tried, with various success: nor can such diversity of effects appear surprizing, if the difficulty of expelling the tape-worm be considered; as, in the attempt, *portions* are frequently broken off and discharged: Nature having endowed this monster with a power of regeneration, it soon acquires its former size, and excites the same turbulent motions. We shall, therefore, state only those remedies which appear to be the most efficacious.

1. The following celebrated specific of **Mad. NOUFFER**, was purchased, and published, by the King of France:—On the day previous to taking the specific, the patient is to refrain from food after dinner, till about 7 or 8 o'clock in the evening, when a panada should be prepared, of a pint and a half of water, 2 or 3 oz. of good fresh butter, and 2 oz. of bread, cut into thin slices; adding a sufficient portion of salt; in this state, it is to be eaten: shortly after, a biscuit and a glass of white-wine are to be swallowed. On the succeeding morning, he ought to take from 2 to 3 drams of the root of the male **FERN** (*Polypodium filix mas*, L.) collected in autumn, and finely pulverized: pure water or tea may

serve

serve as a vehicle. If the medicine occasion nausea, any aromatic may be chewed, but without swallowing it; or, strong vinegar may be inhaled, in order to check the sickness; but if, notwithstanding these endeavours, the powder be rejected, the dose is to be repeated, and the patient should endeavour to rest, as soon as the sickness subsides. About two hours after, one half of the following preparation should be given, namely: Mercury, fourteen times sublimed (*calomel* will answer the same purpose); and select resin of scammony, ten grains each; fresh gamboge, 6 or 7 grains: reduce the whole into a fine powder, and form it into two boluses, by means of a conserve: these are to be taken at two different times. During the operation, as well as after administering each bolus, weak tea should be allowed in copious draughts. When the worm is expelled, a bason of broth, and the customary diet, may again be resorted to. If, however, the creature should be discharged previously to using the second dose, only the greater half of it, or, a portion of Epsom salt, is to be administered.

2. The method of carrying off the tape-worm, recommended by HERRNSCHWANDT, is as follows: The patient must swallow *one dram* of the male fern two successive mornings, before breakfast; and, in the evening, two hours after a light supper. On the third morning, the following powder is likewise to be taken before breakfast, and followed by large potions of weak tea: Take of purified gamboge, 12 grains; salt of wormwood 20 grains, and STARKEY'S soap (a composition of distilled oil

and fixed vegetable alkali) 2 grains; the whole to be duly incorporated: three hours after, 1 oz. of castor-oil is to be swallowed in a cup of beef-tea, and repeated once or twice at similar intervals. If the worm be still retained, a clyster, consisting of equal parts of milk and water, with 3 oz. of castor-oil, must be injected in the evening, which is generally productive of the desired effect.

3. The last of these *specifics* (as they are vainly styled), is that which MATHIEU, an apothecary of Berlin, lately asserted to have discovered; and for which the present King of Prussia honoured him with a title, and pension for life: the following are its ingredients: Take filings of pure tin, 1 oz.; powdered male fern, 6 drams; wormseed, $\frac{1}{2}$ oz.; powdered root of jalap, and polychrest salt (*vitriolated kali*), of each $\frac{1}{2}$ oz.; the whole to be properly mixed with a sufficient quantity of honey, so as to form an electuary, which may be marked No. 1. Farther, take powdered root of jalap, polychrest salt, of each 2 scruples; scammony (of Aleppo), 1 scruple; gamboge, 10 grains: these articles are also to be formed into an electuary with honey, and to be noted No. 2. The patient should, for several days previous to the use of this remedy, observe a very moderate diet, consisting of panada, and light vegetable food; but he ought especially to use salted provisions, such as herrings, &c. After these preparatory measures, a tea-spoonful of the electuary, No. 1, is to be taken every two hours, for two or three days, until a sensation of the worm be felt in the intestines; when one tea-spoonful of the electuary, No. 2, is to be given every two hours, till the

the creature be discharged. Should it, however, fail of success, 2 or 3 table-spoonfuls of fresh castor-oil are to be taken by the mouth, or a clyster, consisting chiefly of this oil, ought to be administered. The contriver of this method prudently observes, that the use of such active medicines, should be directed by a skilful physician, on account of the material difference in the sex, age, and constitution of individuals. He farther remarks, that as the efficacy of the remedy, No. 1, greatly depends on the quality of the *male fern*; care should be taken, that the root of the *Poly-podium filix mas*, and not of a spurious variety, be selected for the purpose; and that even of the genuine root, only the medullary part is to be pulverized: in this state, it assumes a reddish colour.

On reviewing these boasted remedies, it becomes evident that their principal efficacy is derived from the *male fern*, properly combined with *drastic purgatives*; though it cannot be denied, that the auxiliary ingredients have, in some worm-cases, proved equally successful. But all those drugs having been known to the medical world for centuries, it is to us a matter of surprize, that a man, like MATHIEU, should have the effrontery to offer this *cluster of vermifuges* as things of his own invention, and obtain from the royal hand, a gilt laurel, for which others have for past ages, toiled in vain! Nay, we are informed that, in a particular case, his pretended specific has also failed.—Quackery remains the same, whether covered with embroidered scarlet, or with rags.

Electricity has, likewise, been recommended for the removal of

this troublesome inhabitant of the human body, especially after taking a brisk laxative in the morning.—Physicians on the Continent have remarked, that in persons who had eaten a supper of strawberries, the tape-worm could be traced to different parts of the abdomen, by means of electric sparks drawn from a wooden point, and carefully directed to the body, so that it could afterwards be easily expelled.

Lastly, there is another efficacious method of exterminating this worm; and which has frequently been attended with the desired effect. Three or four days, previously to the use of opening medicines, from one to three tea-spoonfuls of a solution of tartarized antimony (2 grains in 4 oz. of water), is to be taken three times a-day: on the fourth day, a purging powder, composed of calomel and jalap, from 3 to 6 grains each, accordingly as the patient is moved with greater or less difficulty, must be administered before breakfast; but he should endeavour to check vomiting. In case this dose prove not sufficiently powerful, its operation may be promoted by the internal use and external application of castor-oil. During the passage of the worm, care must be taken not to interrupt its progress; as it has been observed, on the least irritation, either to return into the body, or to break off suddenly; in consequence of which, the whole complaint will be renewed: hence it would be advisable to sit on a vessel containing lukewarm milk, into which it may gradually descend; a practice that has often been attended with success.

TAPIOCA. See CASSAVA.

TAR, a thick, black, unctuous matter,

matter, extracted from old **PINE** and **FIR** trees, by their combustion in a close, smothering heat; (see vol. iii. p. 384). It may also be procured from pit-coal; and for such purpose, Lord DUNDONALD obtained a patent, of which we have given a concise account in vol. ii. pp. 17, and 18.

Tar is an article of great utility, both in manufactures, and for various economical purposes: it likewise affords security to trees, from the ravages of hares, and other predatory animals: thus, if one part of tar be mixed with six or seven parts of grease, and the composition be laid on the bark with a brush, it will effectually defend plantations, and at the same time prevent the trees from being *bark-bound*; a disease that often occurs, from the injudicious use of tar and lime. There are, however, some delicate shrubs, to which this mixture cannot be safely or conveniently applied: hence, it will be advisable to surround them with twine covered with tar; and, as this fluid is apt to lose its odour, on exposure to the air, it must be occasionally renewed.

Though considerable quantities of tar are prepared in Britain, yet, as they are insufficient to supply the market, a great number of barrels is annually imported from Sweden, Russia, America, and other countries; in consequence of which, it is subjected to certain duties, amounting from 12s. 1½d. to 14s. 4½d. per *last*, accordingly as it is shipped in British, or foreign vessels.

Tar was formerly in great repute as a medicine, both in its original state, and also in infusions with water. It has been greatly recommended by Bishop BARKLEY,

in the MURRAIN of cattle; and likewise in cold and phlegmatic habits of mankind; as it not only raises the pulse, and accelerates the circulation, but at the same time exhilarates the animal spirits. At present, however, tar-water is seldom employed; though it doubtless may, in some cases, be used with advantage; and especially in external applications for *stings*.—Thus, if a person stung by wasps, bees, &c. apply to the injured part a pledget dipped in such liquid, it will instantaneously mitigate acute pain, while it prevents swelling and other consequences.

TARE. See VETCH.

TARRAGON, or *Artemisiadracunculus*, L. is a hardy exotic plant, growing in France, as well as in the warmer climates of Europe; and which is cultivated in Britain for culinary uses. It may be propagated by parting the roots, which will flourish in any garden soil; the herb flowering in July, and producing ripe seeds in autumn.

Tarragon is a hot, bitter vegetable, and is frequently eaten with lettuces, or other cold salad-herbs; though it is occasionally used as an ingredient in soups.—Its seeds are very pungent, and may be advantageously substituted for the more costly *spices* obtained from the Indies.

TARRAS, TERRAS, or TRAAS, a species of argillaceous earth, found in Germany, and Sweden, whence it is annually imported; being subject to the duty of 6½d. per bushel. It is of a pale-yellowish colour, containing numerous particles of spar, and other heterogeneous matters.

When reduced to powder, and mixed with water, terras forms a most durable cement or mortar, which

which is advantageously employed for lining basons, cisterns, or other reservoirs.

In the 5th vol. of the *Transactions of the Society for the Encouragement of Arts, &c.* for 1787, we meet with a communication by Mr. MORE, stating, that a species of red earth has been discovered in the parish of St. Elizabeth, Jamaica, which is an excellent substitute for tarras, in all buildings under water. Thus, if one measure of such earth be mixed with an equal portion of sand, and a double quantity of well-slacked lime, the whole will form a cement, excellently adapted for constructing dams, bridges, or any other edifice in water; as it speedily hardens, and acquires the durability of stone.

TARTAR, a concrete saline matter, which separates from wines, after they have undergone complete fermentation: it adheres to the top and sides of the cask, in red or whitish-grey crystals, according to the colour of the liquor. In this state, it is called *crude tartar*; having a sub-acid taste, and being with difficulty soluble in water.

By repeated solution, filtration, and crystallization, crude tartar may be *depurated* or divested of all gross and impure particles, when it is called *crystals of tartar*; and, if these be reduced to powder, *cream of tartar*.

This salt is a mild, cooling and aperient medicine: if half or a whole ounce of it be taken in substance, with treacle, or any other vehicle, it proves an effectual purgative. Farther, when dissolved in water, it affords, with the addition of sugar, an agreeable acidulated drink, which is of great service in ardent fevers; and like-

wise forms a pleasant beverage during the summer.

TARTAR-EMETIC, or Tartarized Antimony, is prepared, according to the London College, by boiling in a glass vessel, 3 oz. of crocus of antimony, and 4 oz. of crystals of tartar, in 2 pints of distilled water, for about 15 minutes; when the solution should be filtered through paper, and the strained liquor kept in a cool place, in order to form crystals.—This preparation is employed as an emetic, for which purpose it is far superior to any other composition of antimony; as it operates powerfully, without disordering the constitution. When the full effect of an emetic is required, the dose varies from 2 to 4 grains; though it may be more advantageously administered in smaller quantities, as a nauseating and sudorific medicine.—Dr. HUFELAND has observed, that one scruple of starch, combined with a single grain of emetic tartar, operates with greater speed, and certainty, than a full dose of the latter.

TASTE, in the animal economy, is one of the five senses, or that faculty which enables all organized beings to discern the various impressions produced by different substances on the tongue and the palate: thus we can distinguish sweet from bitter, and salt from acid.

This sense, being peculiarly refined in man, is carried on by means of numerous nerves connected with the mouth. In healthy persons, the taste is very acute; but, if the *papillæ*, or nervous warts, be weakened, by excess in eating hot and highly-seasoned soups, or other food; or by drinking spirituous liquors; by indulgence

gence in smoking, &c. ; or by age ; the impression of savoury substances is gradually weakened, and this organ at length greatly impaired. The most certain method of preserving such useful sense, consists in adopting the strictest temperance, both with respect to food, and drink : in this manner, we may at all times not only partake with pleasure of our homely provision, but also relish with a superior degree of satisfaction the more luxurious dishes, that may occasionally be introduced at our tables. At all events, it is one of the most humiliating sensations, which daily reminds us of our animal nature.

TEA-TREE, or *Thea*, L. a genus of shrubs consisting of two species ; namely, 1. the *Bohea*, or Black Tea ; and, 2. the *viridis*, or Green Tea ; both of which are natives of China and Japan, where they attain the height of 5 or 6 feet.

The Tea-tree produces flowers similar to those of the DOG-ROSE, and which are succeeded by fruits of the size of sloes, two or three growing together :—it may be propagated in the temperate climates of Europe, as well as in the Indies, by setting the seeds in holes, about five inches deep, and at regular distances from each other. No particular care is requisite in its culture ; but the ground must be cleared of weeds : at the expiration of three years, the leaves are fit to be gathered. Great pains are taken in collecting them *singly*, at three different times ; namely, about the middle of February ; in the beginning of March ; and in April. Although some writers assert, that they are first exposed to the steam of boiling water, and then dried on *copper* plates ; yet we understand from indubitable

authority, that such leaves are simply dried on *iron* plates, suspended over a fire, till they become dry and shrivelled : when cool, they are packed in tin boxes, to exclude the air, and in that state exported to Europe. It is, however, remarkable that the fresh leaves of this shrub, when used for tea, occasion giddiness, and stupefaction ; which noxious properties are dissipated, by roasting them over a moderate fire. Nor is it advisable to drink infusions of this narcotic vegetable, till it be kept at least for 12 months.

Since the commencement of the 17th century, the consumption of tea-leaves has become so general, that, according to the most accurate calculations, there are at present 30 millions of pounds weight annually imported into Europe ; three-fifths (or, during war, three-fourths) of which are brought to London, in British vessels. Thus, we are every year drained of a sum of money which, if it were applied to the improvement of national agriculture, would support many thousand industrious families ; by whose labour, during six weeks in the year, all the British empire might be provided with *native teas*. Nay, it is still more surprising, that, though every intelligent mind will attest the truth of this remark, yet no landed proprietor, who is in any manner connected with commercial speculations, or who has the least interest in the affairs of India, will rise in a legislative capacity, with a view to remedy, or at least to check, this serious evil ; an evil which, like a slow cancer, consumes the vital principle, and exhausts the best sources of a country.

As the Tea-tree grows principally

pally between the 30th and 40th degrees of latitude, it might be easily raised in Europe: indeed, from the success with which plantations of this shrub have lately been established by a society of nuns in Franconia, near Würzburg, there is great reason to believe, that it would also prosper in the southern counties of Britain, if proper attention were paid, till it become habituated to our climate. There are, besides, many indigenous vegetables that may be advantageously substituted; such are SAGE, BALM, PEPPERMINT, and similar spicy plants; the flowers of the Sweet WOODROOF; those of the Burnet, or Pimpernel ROSE; the leaves of PEACH and ALMOND-trees; the young and tender leaves of BILBERRY, and Common RASPBERRY; and, lastly, the blossoms of the Black-thorn, or SLOE-TREE; most of which, when carefully gathered, and dried in the shade (especially if they be managed like Indian tea-leaves), can with difficulty be distinguished from the foreign teas, and are at the same time of superior flavour and salubrity.

Teas are divided, in Britain, into three kinds of *green*, and five of *BOHEA*. The former class includes, 1. *Imperial*, or *Bloom Tea*, having a large leaf, a faint smell, and being of a light-green colour: 2. *Hyson*, which has small curled leaves, of a green shade, inclining to blue: and, 3. *Singlo Tea*, thus termed from the place where it is cultivated.—The *Boheas* comprehend: 1. *Souchong*, which, on infusion, imparts a yellowish-green colour. 2. *Cumho*, a fine tea, emitting a fragrant violet smell, and yielding a pale shade: it receives its name from the province

where it is reared. 3. *Pekoe Tea*, is known by the small white flowers that are mixed with it. 4. *Conngo*, has a larger leaf than the preceding variety, and yields a deeper tint to water: and, 5. *Common Bohea*, the leaves of which are of an uniform, green colour. There are, besides, other kinds of tea, sold under the names of *Gunpowder-Tea*, &c. which differ from the preceding, only in the minuteness of their leaves, and being dried with additional care.

Much has been said and written on the medicinal properties of tea: in its natural state, it is doubtless a *narcotic*, or stupefying plant; on which account, even the Chinese refrain from its use, till it has been divested of this property by the processes above described. If, however, *good tea* be drunk in moderate quantities, with sufficient milk and sugar, it invigorates the system, and produces a temporary exhilaration; but, when taken too copiously, it is apt to occasion weakness, tremor, palsies, and various other symptoms, similar to those arising from narcotic plants; while it doubtless contributes to aggravate the hysteric and hypochondriacal complaints, which now very generally prevail in both sexes. This drug has, farther, been supposed to possess considerable diuretic and sudorific virtues; which, however, depend more on the *quantity* of warm water employed as a vehicle, than the quality of the tea itself. Lastly, as infusions of these leaves are the safest refreshment after undergoing great bodily fatigue, or mental exertion, they afford an agreeable beverage to those who are exposed to cold weather; at the same time tending to support and promote that perspiration

spiration which is otherwise liable to be impeded.

Immense quantities of tea-leaves are annually imported by the East India Company, paying a duty of 5l. per cent. according to the value; and, when taken out for home-consumption, they are subject to the farther charge of 15l. per cent.; if they be under the price of 2s. 6d. per lb. at the Company's sales; but in case the tea exceed that sum, it is chargeable with the duty of 30l. per cent.

TEAL, the **COMMON**, or *Anas creca*, L. a bird of passage, frequenting lakes, ponds, and fenny places: it is about 14 inches in length, has a green spot on the wings, and is marked with a white line, both above and below the eyes.

The Teal commonly associates with wild ducks; being also taken together, and sold in our markets. The former birds subsist on grass and weeds, growing on the margin of ponds, sometimes on the seeds of rushes; and, though occasionally eating small fishes, yet their flesh is much esteemed. They construct their nests in April, among rushes, on the edges of ponds: the eggs are of a size similar to those of pigeons, but of a greasy-white colour, and marked with small hazel spots.

TEASEL, or *Dipsacus*, L. a genus of plants exhibiting five species: three are indigenous; but the principal is the *fullonum* (more properly *sativus*), Manured, or Fuller's Teasel. It is raised from seed, which must be scattered on ridges, 7 or 10 inches apart, in the proportion of two pecks per acre. The most proper season for its propagation, is the month of April: the soil ought to be a strong, rich

clay, or, what agriculturists term, a *good wheat-land*. The young plants should be carefully weeded; and, if they grow too closely together, it will be proper to thin them, to the distance of one foot. In the spring of the second year, the teasels must be earthed up; and, in the succeeding month of July, the heads will begin to flower. In August, as soon as the blossoms decay, such heads must be cut off, and exposed daily to the sun, till they become completely dry; care being taken to shelter them from rain.

The teasel is an article of considerable importance to clothiers, who employ the crooked awns of the heads, for raising the knap on woollen cloths. For this purpose, they are fixed round the periphery of a large broad wheel; against which the cloth is held, while the machine is turned.—Lastly, the blossoms of the teasel supply bees with honey; and the water, which collects within the cavities of leaves grown together, is said to be an useful application to weak or inflamed eyes; and likewise to afford a harmless cosmetic for removing spots from the face.

TEETH, a set of bones, situated in the upper and lower jaws, for the purpose of mastication: in adults, there are 32 in number, or 16 in each jaw-bone.

The teeth are of various size, being arranged in the following order: *four* in the front, termed cutting teet, on each side of which is a sharp-pointed, canine, or *eye-tooth*; adjoining to these are *five* grinders on each side, the last of which is denominated the tooth of wisdom; because it seldom appears before the 25th year. The front and eye-teeth are furnished with

with only one root each; the two first grinders with two; and the hindmost generally with three or four; which may in most persons be ascertained by the number of small tubercles on the crowns.

The tooth is divided into two principal parts; namely, the *crown*, which projects above the gums; and the *root*, that is inclosed within the sockets: the crown is a hard, fine, glossy, white *enamel*, serving to defend the substance against external injury: the root is open at the bottom, where it is connected with vessels and nerves, by which it receives nourishment, life, and sensation.

As an account of the manner in which the teeth are formed, may prove interesting to reflecting readers, we shall proceed to state concisely the process of *dentition*, or teething; and conclude with a short analysis of the *diseases* to which these useful bones are frequently liable.

In an embryo of 3 or 4 months formation, instead of the sockets, small cells are observable: these are separated by thin membranes; each of which progressively exhibits a vascular bag, containing a soft knob, that is covered by the rising tooth, forming a hard coat; but the enamel appears to originate from crystallized matter. During the first year, the two middle front teeth in the under jaw, and shortly after, the two upper ones, become visible: they are succeeded by the foremost front teeth. In the commencement of the second year, the first grinder, on each side, grows successively in the under and upper jaws: the next in rotation, are the canine or corner teeth, and finally, about the third year, there rise from two to

three grinders on each side. About the seventh year, all these teeth are, by an effort of Nature, gradually replaced by a new set, to which are joined, in the tenth or eleventh year, another grinder, and, at a later period, the tooth of wisdom.

During the progress of dentition, children are subject to various affections, such as convulsions, inflammation, fever, &c. occasioned by the pressure of the teeth, in bursting through the gums. At this period, a moderate looseness, or a copious flow of saliva are, in general, favourable signs. With a view to promote the latter, it will be advisable to let the child chew or gnaw such substances, as have a tendency to mollify the gums, and, by their pressure, to facilitate the protrusion; for which purpose a piece of liquorice or marshmallow root, &c. will be of service; or, the gums may be softened and relaxed, by rubbing them with sweet oil, honey, or other emollients.—Costiveness should be removed by mild aperient clysters. If, however, all these endeavours prove ineffectual, relief has often been derived from an incision made in the gum; though such operation should be undertaken only by the surgeon.—In cases of extreme weakness, the application of blisters behind the ears, or to the back, will prove beneficial; and, as distressing symptoms frequently arise from crudities and obstructions in the first passages, it will be necessary to attend to this circumstance: thus, if the child be troubled with acidity and flatulence, the testaceous powder, or calcined magnesia with a few grains of rhubarb, mixed with powder of sweet fennel-seeds, will form a very useful remedy; or, when

when worms torment the infant, the means suggested under that article, should be speedily adopted.—On this occasion, we deem it our duty, in the strongest terms to caution parents against the use of laudanum, and other *composing* medicines, especially when the bowels are obstructed.

With respect to the *diseases* of the teeth, we shall, in this place, mention only such as occur more frequently, and which are, by proper attention, or by external applications, easily removed.—From a view of the nature and formation of the teeth, it must be evident, that whatever may tend to remove the enamel, for instance, *acrid* dentifrices and tinctures, hard metallic tooth-picks, sudden changes from heat to cold (especially in taking food), by exposing the nerve, cannot fail to produce the *tooth-ach*; and, in the course of time, a *decay* of the bone itself. There are even instances, where such corruption, unless timely checked, has extended its influence to the jaw-bone. Nothing, however, contributes to injure them more certainly than uncleanness; by which a kind of tartar is generated, that settles on the teeth, and separates them from the gums: thus, the air and the food coming into immediate contact with the bony substance, will prove a never-failing source of pain and distress.

Cure.:—As it would be a vain attempt to point out any *specific*, by which the tooth-ach can be removed, we shall recommend only such remedies as are adapted to the several causes, from which it may originate.—If the patient be of a plethoric habit, or the gums be considerably inflamed, recourse should be had to bleeding, parti-

cularly by leeches and cupping-glasses, applied contiguously to the part affected: next, blisters behind the ears, or on the nape of the neck, will be found of service.—Dr. CULLEN recommends vitriolic æther to be dropped on the cheek, and to hold the hand on the part, till that volatile liquor be evaporated. Should, however, the pain still continue, without intermission, a few drops of laudanum on cotton, laid on the tooth, will sometimes afford relief. Where the bone is hollow, and decayed, it will be advisable either to have it drawn by an able dentist, or to resort to such substances as destroy the nerve: the latter object may be effected by a careful application of the strong mineral acids, juniper-oil, or by a red-hot wire; but this operation, which has frequently produced the desired effect, ought never to be entrusted to an unskilful person.—As the tooth-ach is frequently induced by cold, and attended with symptoms of CATARRH, it will in such cases be requisite to follow the directions given in that article.—This complaint, likewise, often proceeds from affections or debility of the stomach; a source which may be ascertained by the symptoms of indigestion, such as loss of appetite, nausea, vomiting, and head-ach, with this peculiar circumstance, that the pain generally returns at regular periods. In such case, relief can only be expected from a proper use of emetics, and mild aperients, succeeded by a judicious course of the Peruvian bark, and similar tonics.

Another source of these affections, is an irregular disposition, or arrangement, especially of the front-teeth, and mostly in the

second set. It may proceed either from some of the first set having been suffered to remain in the jaw, after the second has appeared; from a want of space in the jaw-bone; or, from mal-conformation. In these cases, the only effectual remedy is that of extracting such of the teeth, as by their situation obstruct their neighbours, and sometimes occasion considerable distress.

If the teeth should be loosened by external violence, they may again be fixed, by pressing them firmly into the sockets, and preserving them in that situation, either by a silk, or other ligature attached to the adjoining tooth: the patient, however, ought to subsist entirely on spoon-meat, or other soft and liquid food, till the desired effect be attained. But, where this separation arises from a sponginess or weakness in the gums, mild astringents, for instance, a solution of alum and sugar, tincture of bark, catechu, &c. will serve to consolidate the surrounding parts.

For *cleansing and preserving* the teeth, burnt bread, or bark, applied by the small finger, or on a piece of calico, will be found a safe and useful dentifrice.—Lord DUNDONALD recommends, for this purpose, a weak solution of SODA.

Lastly, in cases where a *substitution of artificial teeth* should be deemed necessary, these useful bones ought to be manufactured from the tooth of the *Hippopotamus*, or river-horse; and on no account whatever to be taken from other persons. There are instances on medical record, where the latter practice has communicated infectious diseases, and eventually proved fatal.

TELESCOPE, one of the most useful optical instruments, consisting of a long tube furnished with several glasses, for the purpose of viewing distant objects.—This term is mostly applied to the larger kinds of telescopes; the smaller ones being called *perspective-glasses*, *spy-glasses*, *opera-glasses*; and a particular species, which is much brighter than any other, is known under the name of *night-glasses*.

Telescopes are of extensive utility, both in naval and military pursuits, but especially for contemplating the celestial bodies: hence the merit and honour of their original invention have been claimed by many ingenious men. According to the most accurate accounts, however, the authentic contriver was ZACHARIAS JANSSEN, a Dutchman, who produced his first instrument in the year 1590. Since that period, various improvements and additions have been made by GALILEO, KEPLER, HUYGENS, MERSENNUS, GREGORY, SHORT, RAMSDEN, DOLLOND, ADAMS, and numerous other philosophers and artists. The most important are, those accomplished by Dr. HERSCHEL, whose grand instrument, when furnished with proper glasses, magnifies upwards of *six thousand* times.

It would be incompatible with our plan, to enter into the *rationale*, or an account of the principles on which telescopes are in general constructed. We shall, therefore, only remark, that a complete description of the machinery of Dr. H.'s noble instrument is inserted in the *Philosophical Transactions of the Royal Society*, Part ii. for 1795;—and we shall proceed to state the principal patents which

which have been granted to different individuals.

The first, within our knowledge deserving notice, is that obtained in April, 1791, by Mr. ROBERT BLAIR, for his method of improving refracting telescopes, and other dioptrical instruments; which is fully detailed in the 7th vol. of the *Repertory of the Arts, &c.*

In January, 1799, a privilege was granted to Mr. CATHER RAND, for an improved military and naval telescope, serving to ascertain distances, &c. at sight, by means of a new micrometrical adjustment. His instruments are made refracting, achromatical, or reflecting; and the micrometer is furnished with four parallel wires, fitted to brass, silver, or other metallic, converging and diverging, plates, together with other machinery; the whole of which is so arranged, that the intermediate distance between two unknown places may, together with the height, or size of such distance, be easily ascertained.—A full specification of this ingenious contrivance is inserted in the 12th vol. of the work above quoted, where it is illustrated by an engraving.

The last patent we shall mention, is that procured by Mr. DUDLEY ADAMS, in May, 1800; for his invention of a mode of rendering telescopes, and other optical glasses, more portable. This useful object is effected by employing certain springs, which are so contrived as to occupy the least possible space, while they render the instrument to which they may be applied, strong and steady, on being drawn out: and, in order that the several glasses may acquire their true positions or distances, when such joints or tubes are drawn out,

he has invented certain *flanches*, for fixing and retaining them in every situation, in which an observer might find it necessary to place them. For a minute account, the curious reader is referred to the 13th vol. of the *Repertory of Arts, &c.* where the patentee's improvements are exemplified by a plate.

TEMPERANCE, strictly speaking, denotes the virtuous practice of those, who restrain their sensual appetites: it is, however, generally used to express *moderation*, in which sense it is indiscriminately applied to all the passions.

Temperance has been justly termed the virtue which bridges the inordinate desires: it is, indeed, closely connected with prudence and justice. It silences calumny, and substitutes extenuation for slander; expels avarice from the bosom; and thus demonstrates that true happiness consists not in contemplating useless wealth, or indulging in ambitious pursuits, or in the gratification of a vitiated palate; but in a contented mind. The votary of temperance views with equal disgust, the sallies of unjust resentment, and those of riotous mirth: he beholds the melancholy consequences of *intemperance*; learns to extinguish revenge, and every desire which humiliates a rational agent; thus proving that such virtue is the parent of many others, while it is attended with peace, prosperity, health, and satisfaction.

Without expatiating on this topic, let it suffice to observe, that it is a duty incumbent on all parents, to rear their children with a strict regard to *temperance*; as, by adhering to this rule only, they are entitled to enjoy either *health* or *longevity*. Those of our readers,

who are desirous of farther information on this interesting subject, will meet with judicious hints in Mr. NELSON'S *Essay on the Government of Children*, &c. (8vo. 5s. Dodsley); and particularly in Dr. HARWOOD'S little tract, entitled, "*Of Temperance and Intemperance*," &c. (8vo. 2s. 6d. Becket, 1774): in which their effects on the body and mind, and their influence in prolonging or shortening human life, are discussed in clear, energetic language; and confirmed by examples.

TEMPERING. See CASE-HARDENING, and STEEL.

TENCH, or *Cyprinus tinca*, L. a British fish which delights in still waters; being seldom found in rivers. Its back is of a dusky colour; the head, sides, and belly, of a greenish cast, beautifully variegated with a golden hue, that exhibits the greatest lustre, when the fish is in its highest perfection. The body of this fish, in proportion to its length, is thick and short: it commonly weighs about 4lb. though sometimes amounts to 10, or even 20lbs.

Although the Tench was not much esteemed by the ancients, yet at present it is considered palatable food; and, in point of flavour, equal to that of CARP. If caught from clear waters, their flesh is much superior to those occasionally inhabiting muddy places.

Tench is a simple fish, and is easily taken: the method of angling for it, differs in no material respect from that for Carp, but the hooks and lines should be rather finer; and the sportsman may either use leads or floats, accordingly as the water happens to be more or less obstructed by weeds.—See the article CARP.

TENDONS, or **SINAWS**, in the animal frame, are ligaments, by which the motion of the joints is performed.

The principal affections of tendinous parts, proceed from external violence, by which they may be wounded or lacerated. In these cases, surgical assistance ought to be immediately procured; otherwise, inflammation, fever, and even death, may be the consequence. If a tendon be partly divided, a few drops of Peruvian balsam poured into the wound, will be found an excellent remedy. But the principal relief in wounded or ruptured sinews, will be derived from keeping the limb in such a posture as to relax the muscles; and thus to facilitate the re-union of the injured part; after which, a proper bandage of fine soft flannel should be tightly passed round the limb, in order that the muscles may be retained in a state of ease, till a complete cure be accomplished. If such a ligament be violently distended, as is frequently the case in luxations, the most proper application will be the **ARABIAN-SADE-WATER**, described, vol. i. p. 103.

A swelling sometimes appears on the tendons, particularly those of the wrist and ankle, where it is called *ganglion*. Such tumors are of an elastic nature, moveable, and generally arise from external injury, rheumatism, &c.: in many instances, they spontaneously disappear; but in the contrary case, friction, and gentle compression, by means of a thin plate of lead, secured by a proper bandage, will generally be sufficient to remove them. Should this treatment, however, not prove efficacious, or an inflammation of the part ensue, it will

will be advisable *not* to neglect surgical aid.

TENNIS, a play requiring muscular exertion, and at which a ball is driven, by means of a racket.

This game is of French origin, and was introduced into Britain in the 17th century: it is performed in a long court, denominated a *tennis-court*, across which a net is suspended: through the latter, the ball is stricken by a racket; and, accordingly as it is driven into certain galleries, the game is lost or won.

Tennis is played by *sets*, each of which comprehends six games; but, if an *advantage-set* be proposed, 7 successive games must be obtained, by one or other party.—As, however, our limits will not permit us to enter into particulars, the inquisitive reader may consult Mr. HOYLE's "*Games Improved*," by Mr. BEAUFORT (12mo. 3s.), in which the rules of tennis are fully explained.

TERRA JAPONICA. See CATECHU.

TERRIER, or *Canis terrarius*, a variety of the dog-kind, which is of different colours, being sometimes spotted, though generally of a liver, or black hue: its body seldom exceeds 18 inches in length, and the head is embellished with short, smooth, pendent ears.

Terriers are very useful to agriculturists, especially for exterminating rats, pole-cats, and similar depredators. Farther, these animals are remarkable for their vigilance, and are therefore frequently employed as *house-dogs*; but their principal services consist in hunting badgers, foxes, rabbits, and other quadrupeds which burrow under ground; because they enter the holes of such wild creatures, and

either kill or draw them out of their hiding-places.—An account of the diseases to which terriers are liable, the reader will find in the article *Dog*.

TERROR, or the apprehension of an evil which we are unable to prevent, is one of the most destructive passions inherent in mankind.

Persons of weak nerves, and those who possess a high degree of sensibility, are most frequently subject to the influence of this tormenting passion: hence they are more severely attacked than the robust or phlegmatic; and the only certain method of preventing ill consequences is, that of avoiding every occasion that may tend to reproduce such disastrous impressions.

Terror contracts every muscle, and induces violent palpitations of the heart, spasms, and fainting: the usual evacuations become obstructed; cutaneous eruptions are repelled to the interior organs more essential to life; the whole system is deranged; violent convulsions, fits of epilepsy, and sudden death, are its frequent effects, especially during and after debilitating diseases.

As this passion is productive of such dreadful consequences, it will be advisable immediately to adopt the treatment generally followed in spasmodic affections. Thus, vinegar, spirits of hartshorn, lavender, or other stimulants, are to be held to the nostrils: a little warm tea, or wine and water, may be given to the patient; his feet and legs should also be plunged in a tepid bath; and the suppressed evacuations ought to be speedily restored. The most important object, however, is the recovery of mental tranquillity: for, unless the mind be composed, external or

or physical remedies will seldom prove of effectual service.

TERTIAN-FEVER. See AGUE.

TEST-LIQUOR. See WINE.

TETTERS. See RINGWORM.

THEATRE, signifies the place in which spectacles, or dramatic representations, are exhibited.

The drama was originally invented in Greece; whence the rules of it have been gradually dispersed over the civilized nations of Europe. It would, however, be inconsistent with our limits, to trace its progress from rudeness to refinement, or *vice versa*: we shall, therefore, content ourselves with remarking, that dramatic performances afford to many persons an agreeable relaxation, after the toils of their industrious pursuits. And, though play-houses have often met with violent opposition, as tending to corrupt the morals of the people; yet, if they be managed with a due regard to decorum, and moral truth, inculcating only virtuous precepts, they doubtless deserve encouragement. Indeed, the tendency of *plays* depends principally on the opinions, manners, and taste of the public: for, as the chief object of those who devote themselves to the stage, is the acquisition of wealth and fame, or notoriety, it follows that if such taste be gross or corrupted, the representations will also partake of the general depravity, in order to please a *mixed* audience: on the other hand, if the national sentiments be elevated and refined, the performances will likewise be divested of rude and licentious expressions; so that the theatre will then be favourable to the cause of virtue and morality. Whether these observations be applicable to the present condition of the British stage, we

submit to the judgment of the attentive reader: but, there are a few remarks, which we cannot on this occasion suppress.

As the language of the drama ought to be alike free from affectation and ambiguity, we think it highly censurable in performers, either to extemporize, where a favourable opportunity offers for *passing off a vulgar joke*; or to substitute words, the meaning of which admits of an explanation unfavourable to moral purity. It would be superfluous to point out the danger of such licentiousness, especially to the young female breast, which is thus imperceptibly contaminated in the presence of parents and guardians. Nor can we approve of another singular custom, now prevalent in our theatres; namely, that of accompanying the most serious drama, or a tragedy, with what is vulgarly called an *entertainment*, or a *farce*: thus, every grain of taste in the audience, is completely effaced; and it appears to us nearly in the same light, as if a person, after hearing an impressive discourse, retires to an adjoining tavern, in order to drown the calls of conscience, by profuse libations to Bacchus.

THERMOMETER, or THERMOSCOPE, an instrument for measuring, with accuracy, the degrees of heat or cold in the air, water, &c.—It is probable, that the expansion and contraction of bodies, in consequence of heat and cold, afforded the first idea for the contrivance of this useful scale.

The thermometer was invented early in the 17th century; and, on account of its extensive service in the arts, manufactures, and domestic life, the original merit of constructing this valuable instrument

is

is variously attributed to CORNELIUS DREBEL, PAUL SARPI, GALILEO, and SANCTORIO; though, we believe, the person first mentioned, deserves the credit of having invented the earliest thermometer, in the year 1638, at Alkmaar, in North Holland. It was, however, an imperfect attempt; being regulated solely by the expansion of the air; and serving at the same time as a BAROMETER; for his tube contained a mixture of water and aqua-fortis. Hence it was, in its primary state, called an *air-thermometer*; and, after substituting various other liquids, which were adopted by the Florentine Academy, by Sir ISAAC NEWTON, and other philosophers, but which, on account of their uncertain properties, have long been disused, Dr. HALLEY proposed, in the year 1680, to employ quicksilver for this important purpose. DANIEL GABRIEL FAHRENHEIT, a native of Danzig, was the first who successfully availed himself of that suggestion, in 1709; when he produced his newly graduated tube, containing the mercurial fluid.—He ascertained the *artificial freezing point* in the same year, during the severe winter; by observing, that a mixture of snow and sal ammoniac, uniformly caused spirit of wine to descend to the point marked, and no farther.—Hence, he was induced to denote such part of his cylindrical tube with 0 or zero: from this point to that of the usual temperature of the human body in a healthy state, he divided the intermediate space into 96 degrees; and thence to that of *boiling water* into 126°, so that the latter mark, in his scale, rises exactly to 212°. Thus, FAHRENHEIT claims not only the merit of

having introduced the most scientific and convenient division of the thermometrical scale, but also that of adopting the mercurial fluid, which is doubtless the most proper, and perhaps the only one furnished by Nature, for measuring the various degrees of heat and cold, in the most accurate and sensible manner.—M. DE LUC has proved, by conclusive arguments, the superiority of thermometers supplied with mercury, over those containing alkohol; and that the rising of the mercury, at all seasons, very nearly corresponds with the increase of heat. On the other hand, DE SERVIERE remarked, that the column of mercury, in a perpendicular thermometer, tends to impede the accurate motion of this metallic fluid, on account of its own specific gravity: hence, he has judiciously proposed to remedy such defect, by keeping the instrument in a horizontal position.

M. DE REAUMUR, in 1730, proposed a new division of the thermometrical scale, by introducing 1000 parts of diluted spirits of wine into his tube with the usual globe, then commencing to count from 0 upwards, to the boiling point, which he marked with 80°. Such contrivance, however, having been found inconvenient for calculating the different degrees of heat and cold, with sufficient accuracy, REAUMUR's globes, with their tubes, were subsequently also furnished with mercury; and are at present chiefly employed by the French, and in some parts of Germany.—To enable the reader to form a distinct idea of the difference subsisting between the two instruments, here described, we shall subjoin a comparative table of their scales.

BELOW

BELOW THE POINT OF BOILING
HEAT.

Fahr.	Reaum.	Fahr.	Reaum.
212	80	122	40
203	76	113	36
194	72	104	32
185	68	95	28
176	64	86	24
167	60	77	20
158	56	68	16
149	52	59	12
140	48	50	8
131	44	41	4

BELOW THE NATURAL FREEZING
POINT.

Fahr.	Reaum.	Fahr.	Reaum.
32	0	16	7.11
31	0.44	14	8.—
30	0.88	12	8.88
28	1.77	10	9.77
26	2.66	8	10.66
24	3.55	6	11.55
23	4.—	5	12.—
22	4.44	4	12.44
20	5.33	2	13.33
18	6.22	0	14.22

From this comparative view, it will appear that *nine* degrees of FAHRENHEIT's (between the point of natural freezing, and that of boiling heat), are equal to *four* of REAUMUR's computation:—hence the scale of the former may be reduced to that of the latter, by multiplying the number of degrees above 32 (because 32 must be subtracted from the whole number given) by 4, and dividing the product by 9.—On the other hand, if the given degrees be multiplied by 9, and the product divided by 4, REAUMUR's scale may be reduced to that of FAHRENHEIT.—Upon these principles, the preceding tables are calculated, with two decimals only below the freezing point. But, if any intermediate

degrees be wanted, they may be easily ascertained, by a similar arithmetical process.

It would be needless to describe the various thermometers invented during the last century; because the two instruments before mentioned have received almost universal sanction; few others being at present employed, either by artists or men of science. Hence we shall merely observe, that DE L'ISLE, at Petersburg, contrived a new thermometer, in 1733, which is divided into 50°.—Prof. CHRISTIN, of Lyons, proposed a scale of 100 equal parts between the freezing and boiling points: this division was adopted by Prof. CELSIUS, in Upsala, whose improved scale, consisting of 100 exact degrees, is generally used in Sweden.

There are many other thermometers, among which, those by DUCREST of Geneva; by STROHMAYER and BRANDER, in Germany; by GRUBERT in France (who, together with the three preceding, contrived the *Universal Thermometer*, which contains the comparative scales of 28 different instruments); by DE LUC; RENALDINI; CAVENDISH; KÖNIGSDÖRFER; MUDGE; the BERNOULLIS; FONTANA; ACHARD; LICHTENBERG; LANDRIANI; SAUSSURE; CASTELLI; and LUZ.

The first idea for constructing a metallic thermometer, or properly, *pyrometer*, was furnished by GRAHAM, and improved upon by MORTIMER, INGRAM, Count LÖSER, FITZGERALD, FELTER, and at length brought to perfection by WEDGEWOOD. This ingenious manufacturer (of the finest earthenware from basaltic masses, or *terracotta*) has rendered an essential service to society, by his method of

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ascertaining high degrees of heat : for this purpose he employs small cubes of dry clay ; because that species of earth has the remarkable property of contracting in its bulk ; when submitted to the fire, and not again expanding, on suddenly exposing it to the cold air. In order to ascertain the precise degree of heat in an oven, he puts one of his clay-cubes into it ; and, after having acquired the temperature of the place, he immediately plunges it into cold water. Now, the size of the cube (that was exactly adjusted to half an inch square) is measured between two brass rules, the sides of which are somewhat obliquely disposed, so as to form an irregular groove, into which the cube may be slid. In proportion as the bulk of the latter has been contracted by heat, it passes down deeper between the scales, on which the various degrees of temperature have been previously marked. Thus, when the division of the scale commences from the point of red heat visible in day-light, and the whole range be divided into 240 equal parts, it will be found that Swedish copper melts at 28 ; gold at 32 ; iron at from 130 to 150 degrees : above this point, the cubes could not be heated. But, if one of these clay squares be put into an oven where other materials, such as bread, earthen-ware, &c. are to be baked, they may be usefully employed, for regulating the necessary degree of heat.

THIGH, a term applied to that part of the human body, which is situated between the *pelvis*, or *basin*, and the knee ; thus forming the upper portion of the lower extremity. The principal affections to which this limb is liable, being **FRACTURE, DISLOCATION, and**

sciatica, it will be unnecessary to enter into any farther discussion on these heads ; as they have been already treated of, vol. ii. p. 331 ; vol. iii. pp. 136, and 488.

THIRST, is an uneasy sensation, which arises from a deficiency of saliva, for moistening the mouth, and lubricating the throat.

Thirst is generally occasioned by the use of strong, salted, or highly-seasoned food : a moderate degree contributes to the preservation of health ; as it requires a certain proportion of drink, to promote digestion ; but, if it become excessive, it is in most cases a symptom of fevers, dropsies, &c.

The most effectual way of alleviating thirst, will be the use of diluted vegetable acids ; or the chewing of a crust of bread with a little water, which liquid may be gradually swallowed. Where this unpleasant sensation, however, is consequent on any disease, the removal of the latter, together with the aid of diluent liquors adapted to its nature, and taken in small quantities, will also prevent the return of thirst. In other cases, where the use of acids or profuse draughts of diluents, might be productive of injury to the constitution, this complaint may sometimes be obviated, by chewing the root of the pellitory, or some similar substance, which excites and increases the flow of saliva. Lastly, as thirst is often the concomitant of excessive **HUNGER**, and may sometimes occur at sea, the adoption of the expedients pointed out in that article, will generally afford relief.

THISTLE, or *Carduus*, L. a genus of plants, comprising 39 species ; 10 of which are indigenous : the following are the principal :

1. The

1. The *marianus*. See MILK-THISTLE.

2. The *lanceolatus*, or SPEAR-THISTLE, grows on rubbish, and road-sides, where it flowers in the months of July and August.—According to Dr. WITHERING, this species vegetates on ground newly turned up, where no other weed will thrive: under the shelter it affords, new plants will speedily appear, and the whole become fertile. Its flowers, like those of the artichoke, possess the property of curdling milk. It is not relished by horses, cows, or goats; and is totally refused by sheep and swine.

3. The *acaulis*, or DWARF-THISTLE, thrives in mountainous and rocky, dry pastures; flowering in the month of July.—This species is perennial, and should be carefully extirpated; as it is exceedingly destructive to the herbage growing beneath its shade. It is wholly rejected by cows.

4. The *Benedictus*, or BLESSED THISTLE, is an annual exotic, cultivated in gardens: it flowers in the months of June and July, and produces ripe seeds in autumn.—Its leaves possess a penetrating bitter taste, and have an ungrateful flavour which, by keeping them for some time, is mostly dissipated. A decoction of this nauseous plant is sometimes used to excite vomiting; and likewise a strong infusion, to promote the operation of other emetics. Good effects have occasionally been derived from the Blessed Thistle, in loss of appetite; or where the stomach was impaired by irregularities. A strong infusion, either in cold or warm water, drunk freely, occasions a copious perspiration, and promotes the secretions.

All the species of this neglected vegetable, may be usefully employed for various purposes: thus, the seed-crowns of the thistle afford both a valuable material for manufacturing PAPER, and a kind of strong cloth; the ashes obtained by burning the whole plant, are of great service in glass-houses; and the young, tender, mealy stalks may be dressed, and eaten, as substitutes for *asparagus*.

THISTLE, the COTTON, COMMON ARGENTINE, or WOOLLY ONOPORDUM, *Onopordon Acanthium*, L. a native biennial, growing to the height of 6 feet, on rubbish, and road-sides, where it flowers in July. This vegetable is refused by cows, horses, and sheep:—its expressed juice, was among the ancients reputed to be a specific in cancerous cases:—the receptacles or bases of the flower-cups, together with the stems, may be boiled and eaten like *artichokes*.—The woolly substance enveloping the seed, is equally useful in the manufacture of cloth and PAPER, (see vol. iii. p. 335).—The seeds of this remarkable plant also promise great advantages to the industrious husbandman: we learn from DURANDE, a French writer, in the *Bibliothèque Physico-economique*, vol. ii. p. 122, that he collected a number of the seed-crowns, weighing 22 lbs.; from which he obtained 12 lbs. weight of seed; and, on expression, 3 lbs. of excellent lamp-oil, greatly superior to that of linseed, and equal to olive-oil.

THISTLE, the Sow. See SOW-THISTLE.

THORN-APPLE, the COMMON, or *Datura Stramonium*, L. originally a native of America, but now indigenous in some parts of Britain,

tain; where it grows among rubbish, and on dunghills; flowering in the month of July.

The seeds of this vegetable have always been classed among the violent narcotic poisons: though, according to Baron STORCK, and other German physicians, the inspissated juice of its leaves has, on the Continent; been successfully employed in maniacal cases: the dose is from one to ten grains, or upwards, to be taken in 24 hours.—It may likewise be administered internally, both in convulsive and epileptic affections. Dr. WITHERING observes, that an ointment prepared from the leaves, affords relief in external inflammations, and especially in the piles.—Either the seeds or leaves, if swallowed by accident, occasion delirium, tremor, swelling, itching, insupportable thirst, palsy, and death: they likewise tend to inflame the skin. The most effectual antidotes will be, speedy emetics, followed by copious draughts of olive-oil and vinegar, aided by soap-clysters.—The thorn-apple is, nevertheless, eaten by cows, goats, and sheep; but refused by horses. Lastly, the odour of this plant is exceedingly hurtful to mankind; and, if bees happen to settle on its flowers, they die from the narcotic exhalations.

THORNBACKE, or *Raja clavata*, L. a voracious fish, frequenting the sandy shores of Britain, and sometimes weighing a stone and upwards. The upper surface of its body is of a pale ash-colour, intermixed with black streaks; its skin is rough, and has small tubercles, resembling shagreen: there are rows of strong sharp spines disposed along its back and tail.

Thornbacks chiefly subsist on

herrings, flat-fish, and sand-eels, though they occasionally devour crabs, and other shell-fish. Their spawning season is in June; but their young are produced in the months of July and August: the latter (as well as those of the SKATE) are called *maids*, till they arrive at an age sufficient for breeding.

These fish begin to acquire a proper flavour in November, and continue in perfection longer than the skate;—the young of both species are, at all seasons, esteemed wholesome food.

THRASHING, or **THRESHING**, in rural economy, is the operation, by which grain is separated from the straw.

Thrashing is performed by different methods, in various parts of the globe: thus, in the eastern climates, corn is trodden out by oxen, cows, horses, mules, and even by asses: while in Europe, the flail is generally employed. This implement is certainly preferable to the feet of animals; as it is not only more expeditious, but the labour is executed in a much cleaner mode than can be effected by the latter. But, notwithstanding these advantages, thrashing with the flail, is liable to many objections; being too laborious, even for persons of considerable strength: and, as they are often paid in proportion to the quantity of corn thrashed, such work is seldom accomplished in a perfect manner; so that numerous grains generally remain in the straw. To remedy these inconveniencies, machines of various construction, have been invented; and, as some of these contrivances promise to be of great advantage to agriculturists, we shall give an account of the most valuable.

The

The first thrashing machine which has come to our knowledge, is that manufactured, in 1732, by Mr. MICHAEL MENZIES of Edinburgh: it consisted, as far as we have been able to ascertain, of numerous instruments, resembling flails, which were attached to a moveable beam, and inclined to the latter in an angle of 10 degrees. On each side of such beam, were placed floors, or benches, on which the sheaves were spread; the flails being moved forward and backward on these benches by a crank, that was fixed to the end of an axle, revolving about 30 times in a minute.

The second machine was invented, in 1753, by Mr. MICHAEL STERLING, of Dunblaine, Perthshire: his first models were very imperfect; but, after repeated alterations, he completed it in its present form, in 1758; and it now consists of an outer, or water-wheel, having an inner wheel, furnished with 48 cogs, and turning on the same axle. With this cog-wheel is connected a vertical trundle, or pinion, with 7 notches; and the axle of which passes through a floor above the wheel; its upper pivot being secured in a beam 6 inches above the floor. At the height of 3 feet 3 inches from the latter, 2 straight pieces of squared wood (each being 4 feet in length) are inserted through the axle of the pinion, at right angles, so as to form 4 arms, that are moved round horizontally. To the ends of these arms are affixed 4 iron plates, each 20 inches in length, and 8 inches in breadth at the extremity nearest to the arms, but tapering to a point at the opposite end.

The horizontal fly, here described, constitutes four *thrashers*,

and is inclosed in a cylindrical wooden box, that is $3\frac{1}{2}$ feet high, and 8 feet in diameter: on the top of this box is an opening 8 inches in width, extending a foot and a half from the circumference to its centre, and through which the sheaves of corn descend; the latter being previously opened, and laid separately on a board provided with two ledges, gradually declining towards such *port*, or opening.—Within the cylindrical box, there is an inclined plane, along which the straw and grain fall into a wire riddle two feet square, that is placed immediately beneath a hole of a similar size:—the riddle is jerked at each revolution of the spindle, by means of a knob fixed on its side; and is thrust backward by a small spring that presses it in a contrary direction. Thus, the short straw, together with the grain and chaff, that pass through the wide riddle, fall instantly into an oblong, straight riddle, one end of which is raised, and the other depressed, by a similar contrivance. And, as the riddle last-mentioned is not provided with a ledge at the lower end, the long chaff, which cannot pass through, drops thence to the ground, while the grain and smaller chaff descend into a pair of common *barn-fanners*, and are thus separated with great exactness. These fanners are moved by means of a rope, that runs in a shallow groove cut on the circumference of the cog-wheel. In the mean time, the straw collected in the lower part of the box over the wide riddle, and through an opening $2\frac{1}{2}$ feet square, is drawn down to the ground with a rake, by the persons employed to form it into trusses.

In 1772, another thrashing-machine

Mr. Andrau Meikle's Improved Thrashing Machine.

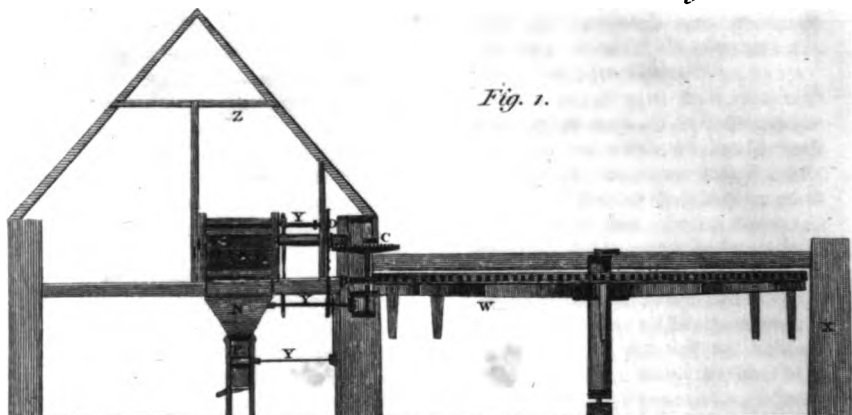


Fig. 1.

Scale of Feet.
1 2 3 4 5 6 7 8 9 10 11 12 13 14

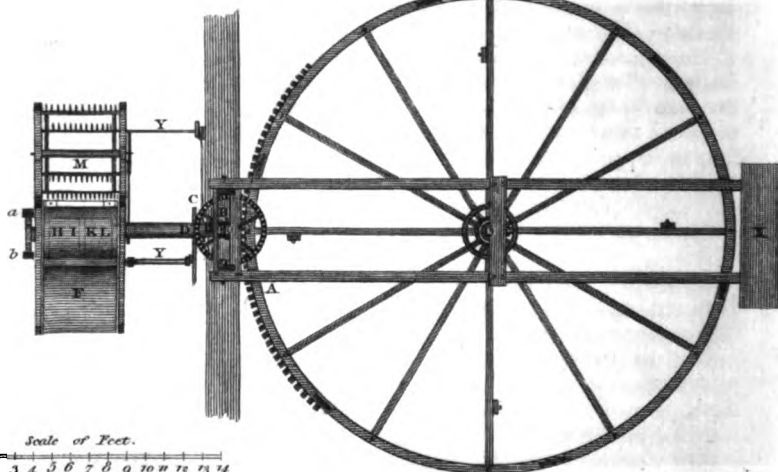
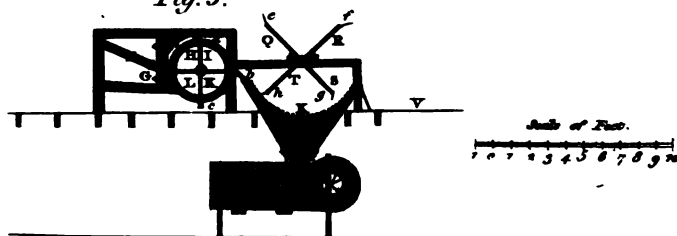


Fig. 2.

Scale of Feet.
1 2 3 4 5 6 7 8 9 10 11 12 13 14

Fig. 3.



Scale of Feet.
1 2 3 4 5 6 7 8 9 10

Machine was invented by Mr. ALBERTON, of Alnwick, and Mr. SMART, of Wark, Northumberland. The operation was performed by rubbing; the sheaves being carried round between an indented drum 6 feet in diameter, and numerous indented rollers, that were arranged rotund, and attached to, this drum by means of springs; so that, during the revolution of the machinery, the corn was separated from the straw, by constant friction against the flutings of the drum. But this contrivance was soon disused; as many grains were thus crushed between the rollers.

The next invention, is that of Mr. ANDREW MEIKLE, in 1788, who obtained a patent, which is now expired: we have therefore given a plate, representing in *Fig. 1*, the plan of elevation; in *Fig. 2*, the ground plan; and in *Fig. 3*, the essential parts of the machinery, so as to convey a tolerably accurate idea of his principle.

Description of Mr. ANDREW MEIKLE'S Improved Thrashing Machine.

A, (*Fig. 1*, and 2), is a large horizontal spur-wheel, which has 276 cogs, and moves the pinion B, having 14 teeth. The latter imparts motion to a crown-wheel, C, that is provided with 84 cogs, and moves a second pinion, D, which is furnished with 16 teeth. This pinion, D, turns the drum H, I, K, L, (*Fig. 1*, 2, and 3), being a hollow cylinder, $3\frac{1}{2}$ feet in diameter, and placed horizontally: on its outside are fixed, by means of screw-bolts; four scutchers, or pieces of wood, one side of which is faced with a thin iron plate; and which are disposed at an equal distance from each other, and at right angles to the axis of the drum.

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P, (*Fig. 2*, and 3), is an inclined board, on which the sheaves are spread, and whence they are introduced between two fluted cast-iron rollers, G, G, (*Fig. 3*), that are $3\frac{1}{2}$ inches in diameter, and revolve about 35 times in one minute. These rollers, being only three-fourths of an inch from the scutchers or leaves of the drum H, I, K, L, (*Fig. 1*, and 2), serve to keep the sheaves steady; while the scutchers a, b, c, d, (*Fig. 2*, and 3), move with uncommon velocity, and thus separate the grain from the straw, while both are thrown on the concave rack M, (*Fig. 2*), which lies horizontally with slender parallel ribs; so that the corn may pass through them, into the subjacent hopper N, (*Fig. 1*, and 3).

O, (*Fig. 3*), is a riddle or harp, through which the corn drops into a pair of fanners, P, (*Fig. 1*, and 3), and from these it is generally obtained in a state fit for the market.

Q, R, T, S, is a rake, consisting of four leaves, or thin pieces of wood: at the extremity of each is placed a row of teeth e, f, g, h, that are five inches long. This rake moves in the concave rack M, (*Fig. 2*), in a circular direction; while the teeth catch the straw, that had been thrown by the scutchers a, b, c, d, into the rack, and remove it to the contiguous place, V.

W, (*Fig. 1*), represents the horse's cquise, which is 27 feet in diameter.

X, (*Fig. 1*, and 2), is the pillar for supporting the beams, on which the axle of the spur-wheel is fixed.

Y, Y, Y, (*Fig. 1*), and Y, Y, (*Fig. 2*), shew the spindles, the design of which is to move the two fluted rollers, the rake, and the fanners.

P

Z, (*Fig.*

Z, (Fig. 1), is a wooden covering at a small distance above the drum, for the purpose of keeping the sheaves close to the scutchers.

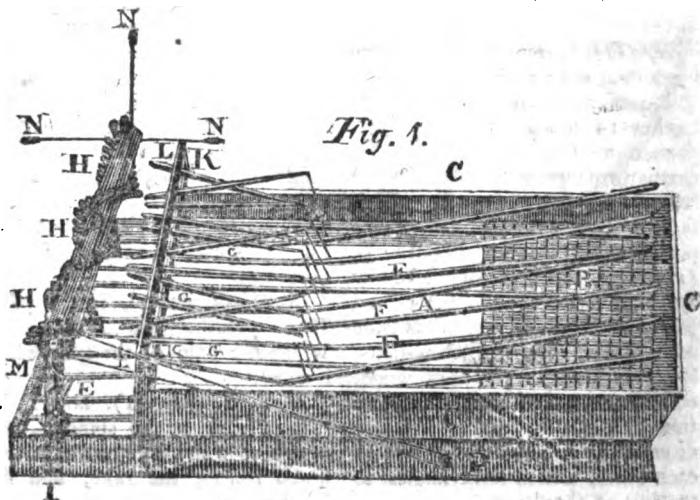
Mr. MEIKLE'S thrashing-machine may be worked with equal effect by horses, by water, or by the wind. If the first of these mechanical powers be employed, the whole, we understand, costs about 70l.; in the second case, it amounts to about 80l., on account of the additional expence of the water-wheel; and, if the thrashing-machine is to be turned by the wind, it cannot be erected for a less sum than from 200l. to 300l. sterling. Although such disbursement be, at first, very considerable, yet numerous machines on this principle have lately been erected in Scotland; because they are eventually cheap, by saving the labour of men, and the keeping of horses.

Six persons are required to attend the *thrashing-mill*; and, though a similar number be employed with the flail, and for clearing an equal quantity of corn from

chaff, yet by the former method, the work is more cleanly, and expeditiously, performed.

The advantages that may be derived from Mr. MEIKLE'S ingenious contrivance, are too obvious to require an enumeration: we shall therefore only observe, that the drum makes 300 revolutions in one minute, and the four scutchers give 1200 strokes in the same space of time: consequently, much work must be executed from such velocity; and, if the horses walk at the rate of $2\frac{1}{2}$ miles every hour, from 3 to 6 *bolls* (or from 12 to 24 English bushels) will be thrashed every hour. Thus, the grain is not only separated in a more perfect manner than is practicable by the flail, but a saving of 30 or 40 per cent. is also obtained in the expence of thrashing.

Another machine was invented, a few years since, by Mr. JAMES WARDROP, of Ampthill, Virginia; for the purpose of separating corn from straw; and of which we have procured the following Cut:



Descrip-

Description of Mr. JAMES WARDROP'S Thrashing Machine, with Elastic Flails.

A, the floor, over which the flails are fixed.

B, represents that part of the floor, on which the sheaves are laid: it is made of wicker-work, through which the grain falls, and is conveyed to the fan or screen below; the pivot of the fan is delineated at P, and is turned by a band from the wheel or wallower, D.

C, C, C, is a thin board raised round the floor, to prevent the wheat from being scattered; and which is made shelving outwards, that the straw may be raked off more easily.

D, the wheel or wallower.

E, crank-handle for turning the wheel.

F, F, F, are the flails.

G, G, G, levers or arms, to which flails are attached by means of ropes.

H, H, H, are teeth or catches for raising the arms.

I, the post, on which the wallower D, is fixed.

K, K, the beam on which the levers rest; being fixed by an iron rod passing through them, and inserted into this beam.

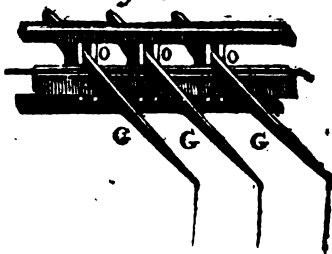
L, L, a check-beam, to prevent the end of the arms from rising.

M, a beam, into which the ends of the flails are mortised.

N, N, N, are fly-ends, weighted with lead, but which are not necessary in a machine that is set in motion by horses.

To render the operation of the machinery somewhat more evident, we have annexed another, though only partial, view of it, together with a few additional explanations.

Fig. 2



This figure represents the arms G, G, G, working in the keeps, O, O, O, and also the manner in which those parts are connected.

The model from which these delineations have been made, was designed to be worked by two men: it was constructed on the scale of a twelve-foot flail, having a spring that required a power of 20lbs. to raise it three feet high at the point. The teeth or catches are mortised into the shaft of the wallower, and placed round its circumference; so as to form an angle of 30 degrees. These teeth catch the arms G, G, G, that raise the flails, alternately: thus, the whole power, namely, 20lbs., acts upon three of the flails, when they are about to strike; three others are two-thirds raised; three more are elevated one-third; and the remaining three flails are at rest; so that the whole weight to be overcome, amounts to 120lbs.

Mr. WARDROP directs the arms to be arranged in such manner, that a line drawn perpendicularly from their lifting extremity, would extend to the middle of the flail: the ropes must be fixed somewhat nearer towards the end, that a proper tangent may be obtained. Farther, the extremities of the lifters, and the teeth in the wallower,

P 2

should

should be rounded off, so as to form a tangent with each other. The ropes ought also to be fixed to the flails with a hook and eye, in order to be removed, when not at work; for, some of the flails being continually in a lifting state, their elasticity would otherwise be impaired. Lastly, such flails acquire greater power, in proportion to the extent of their length, and the height to which they are raised: they operate with effect at one-third of their length; and consequently a flail, that is 24 feet long, will act with force about 8 feet on the floor; a size which is recommended by the inventor, for thrashing-machines worked by horses.

In Mr. BOYR's *General View of the Agriculture of the County of Kent* (8vo. 4s. Nicol), we meet with an account of a thrashing-machine erected in a barn on his farm:—as our limits will not permit us to describe its mechanism, we shall only remark, that it requires four horses, eight men, and four boys, to remove the corn from a distant part of the barn; to feed the mill; attend the winnowing-fan; and stack the straw. Thus, if the corn yield abundantly, the machine will thrash out *three* quarters of wheat, *four* of barley, or *five* of oats, within one hour, in a cleaner manner than can be effected by the usual mode; so that nearly *one-half* of the expence will be saved.

The latest thrashing-machine, which has come to our knowledge, is that invented by Mr. JOHN PALMER, of Maxstock, Warwickshire; for which he obtained a patent in 1799. Not having been able to procure a specification of his privilege, we can only state that the machine may be worked, either

by one or by two horses, as circumstances may direct; but a larger number will, according to the patentee's assertion, never be required: it may also be set in motion, by any other equivalent power. By this contrivance, 24 sheaves of wheat or other grain, each being one yard in circumference, may be thrashed out in five minutes; the straw and grain are completely separated, and the former will be less injured than if the operation were performed with a flail. Farther, no additional building is required for the management of the machine, which may be erected in any barn of an ordinary size, and can be removed to different barns, at a very trifling expence.

Many objections have been started against the introduction of thrashing machines into rural economy; and it has been particularly urged, that the labour and earnings of the poor must necessarily decrease, and a great redundancy of straw will be occasionally produced. Such inconveniences, however, may be easily obviated: for, exclusively of the grain thus secured and saved from the depredations of dishonest workmen, the latter will never be without employment in a country, where extensive tracts of ground lie uncultivated, and the population of which, together with the numerous persons devoted to manufactures and navigation, as well as the importation of corn, by which the national treasury is gradually exhausted—all these circumstances impose the absolute necessity of cultivating every acre of waste land. Farther, by adopting such machines, the grain is not only more speedily separated, but it may also, in damp seasons, be thrashed out *clean*; an object which could not be

be accomplished by the flail: and, if any *smut-balls* occur in the ears, they will not be broken, but a considerable portion of them be dispersed in winnowing. Lastly, a larger quantity of chaff is thus obtained; and, though too great a stock of straw may be produced, for immediate consumption, yet if such article be closely and carefully stacked, it will not be easily injured by keeping.

THREAD, a slender twist manufactured by combining the fibres of flax, hemp, cotton, silk, or other vegetable or animal substances; the primary operation of which is called **SPINNING**.

There are various kinds of this article, such as silk, linen, and cotton thread: the most extensive manufactory for the last mentioned sort, in this country, is established at Paisley, near Glasgow; which, however, is inadequate to supply the market.—Hence, considerable quantities of this commodity are annually imported, and are subject to various duties. Thus, *Bruges* thread pays the sum of 10s. 10½d. per doz. lbs.; *Cross-bow* thread, 16s. 1½d. per 100 lbs.; *Outnal* thread, 19s. 5½d. per 12 lbs.; *Pack* thread, 14s. 6½d. for every 100 lbs.; *Sister's* thread, 3s. per lb.; and *Whited-brown* thread, 19s. 5½d. per 12 lbs.—By the 7 and 8 WILL. III. c. 39, any kind of linen-thread, yarn, &c. may be imported from Ireland, free of duty; provided the master of the vessel produce certificates, of the marks, numbers, &c. of the packages from the shipping-port, together with the names of the persons who exported them, and also of the consignees; at the same time declaring upon oath, that such goods were actually shipped.

THRIFT, or *Statice*, L, a genus

of plants comprising 22 species, 3 of which are indigenous: the following are the principal:

1. The *Limonium*. See **LA-VENDER-THRIFT**.

2. The *Armeria*, **COMMON THRIFT**; **SEA-GILLIFLOWER**; or **SEA-CUSHION**, which is perennial; grows in meadows, and on rocks near the sea-coast; where it flowers in the months of May and June. When in full blossom, it presents a beautiful sight in pasture-grounds; on which account, it is likewise often planted in gardens, as an edging for borders.

The Sea-gilliflower forming whole swards, or tufts of grassy, solid, and smooth leaves, its culture is much recommended in loose sands, which are thus speedily consolidated: the naked stalk, in general, attains only the height of 6 inches.—The plant is eaten by horses and goats, but refused by sheep.

THRIPS, a genus of insects comprising 11 species, that are variously named, according to the trees which they infest. These vermin are extremely minute; having a small slender body, and a rostrum, or beak, which is scarcely perceptible to the naked eye: they are very pernicious to fruit-trees, attacking both the leaves and fruit; but may be extirpated by resorting to the method already pointed out, vol. ii. pp. 21, and 22.

THROAT, or the cavity behind the tongue and the curtain of the palate: the soft parts, of which it is composed, are the common integuments and the muciparous glands. The principal use of these parts being destined to support and facilitate swallowing, breathing, speech, and hearing, it is obvious that all local affections, by which the ex-

ercise of these functions may be impeded, require serious attention. But, as most of the diseases to which they are liable, have already been discussed, we refer to their respective heads: thus, for inflammations in the throat, the reader will consult the articles QUINSY; SWALLOWING, and TONSILS.

THROAT-WORM. See Giant BELL-FLOWER.

THROSTLE, or THRUSH, *Turdus musicus*, L. a well-known British bird, which, in its melodious notes, is excelled only by the nightingale. Its head, back, and lesser coverts of the wings, are of a deep olive-brown; and the inner surface of the latter is yellow. The cheeks and throat are mottled with brown and white; the belly and breast are of a pale-yellow colour, with large black spots.

Throstles build their nests in some low bush or thicket: externally, they are composed of earth, moss, and straw, but the inside is curiously plastered with clay. Here the female deposits 5 or 6 pale-bluish green eggs, marked with dusky spots. The Throstle is by some believed to be the finest singing bird in Britain, on account of the sweetness, variety, and continuance of its melody. From the top of high trees, it exercises its harmonious voice, and for the greater part of the year, amuses us with its song.

THRUSH, a disorder incident to infants, and of which the following are the principal symptoms: Small whitish or grey pustules appear on the fauces, extending over the surface of the tongue, and adjacent parts; the former is swollen, and the whole assumes a purplish colour: sometimes the pimples are scattered, and distinct, but gene-

rally confluent, adhering closely to the membranes: if rubbed off, they speedily grow again, and remain for an indefinite period.

This disease is not confined to the mouth and throat, but in some instances extends to the gullet, stomach, and alimentary canal; quantities of aphthous pustules having been vomited up, and also voided by stool: in these cases, however, the patient is commonly attacked with fever and anxiety, hic-cough, and hoarseness.

The principal cause of this malady is a weak digestion, by which the milk becomes coagulated, and unfit for aliment; though it is frequently induced by cold and moisture. The thrush likewise occurs in the course of other disorders, or, in consequence of certain active medicines; but, under these circumstances, it cannot be considered as a primary affection, and mostly disappears, when the patient is in a convalescent state.—The following conditions prognosticate a favourable event: namely, when there is neither fever nor looseness; the deglutition is easy; the appetite returned; and when the pustules are of a white colour.

Cure:—If the thrush be of a mild nature, it will in general be sufficient to administer the following powder to the nurse: Take of calcined magnesia, 1 oz.; orange-peel, sweet-fennel, and white sugar, finely pulverized, of each 2 drams; mix the whole, of which a tea-spoonful may be taken in water, twice or three times a-day:—in obstinate cases, it will be advisable to give the child about a third or fourth part of the quantity prescribed for the nurse. During this treatment, the following composition should be applied, with a view

to cleanse the mouth: 1 dram of pulverized borax, with 1 oz. of honey of roses. Where costiveness prevails, it will be preferable to regulate the bowels by mild emollient clysters, repeatedly injected, until the desired effect be produced; for, if the pustules should spread over a considerable part of the alimentary canal, laxatives taken by the mouth, are apt to increase the irritation, and to occasion copious stools, tinged with blood.

Where the nipple of the nurse is affected with the thrush, the following solution may be applied with advantage; namely, 2 scruples of borax dissolved in 1 oz. of elder-flower water, or tea, adding half an ounce of honey of roses: the nipples should be anointed with sweet-oil, before the infant is placed to the breast; in order to prevent immediate contact.

As, in some cases, the thrush is situated considerably deeper than the throat, and even within the stomach, great benefit may then be derived from a decoction of carrots in water; or 1 ounce of linseed with 1 pint of water, boiled to the consistence of a thick mucilage, and mixed with 2 oz. of honey: a table-spoonful of the latter preparation may be given occasionally.

In order to prevent this troublesome complaint, infants ought to enjoy a pure air; while the utmost attention should be bestowed on the cleanliness of both child and nurse, by daily bathing and washing with tepid water; which practices remarkably promote insensible perspiration. Farther, the mouth of infants should be frequently washed, especially after drawing the maternal milk, and during the progress of dentition:

nor should their bowels be neglected; and, when obstructed, they must be attentively relieved by the use of manna, tamarinds, and other mild aperients.

THRUSH, in Horses. See **FRUSH**.

THUNDER, a loud noise occasioned by the explosion of a flash of lightning, that is re-echoed from the inequalities on the surface of the earth, and frequently forms a continued rolling or rumbling sound.

Various theories have been proposed by naturalists, to account for this grand and awful phenomenon; but, like that of lightning, it is now generally understood to arise from *electricity*.

Thunder is frequently productive of beneficial effects on animal and vegetable nature; as its violent concussions contribute to disperse the noxious vapours collected in the atmosphere, during sultry and dry summers: it may also be regarded as a prognostic of the weather. **BRADLEY** remarks, that frequent thunder, without lightning, is generally followed by tempestuous winds; but, in the contrary case, it predicts copious and sudden showers.

With a view to prevent fatal accidents, during violent thunderstorms, the erection of **CONDUCTORS** has been strongly recommended.—For the same purpose, the electrical **KITE**, described under that head, may be usefully employed; but it requires to be managed with great precaution: we shall therefore state the most proper manner of directing it, on these occasions.

After having constructed the *electrical kite* on the principles laid down vol. iii. pp. 51-53, it will be necessary to erect a pole or beam,

P 4

with

with a moveable arm on its upper part (nearly resembling in shape the letter F), so as to move on a pivot. If the height of the beam above ground be six feet, the arm requires to be *two* feet, or in a similar proportion, adapted to the length of the former. Near the extremity of the arm, a large stone, weighing from 7 to 14 lbs. should be suspended by means of a strong rope, so that it may balance about six inches from the ground. When the wind has sufficient strength to carry the kite, the main string, by which it is conducted, should be fastened to this stone, and part of the former be allowed to remain on the soil. By such contrivance, the assistance of any person for directing the machine is rendered unnecessary; as the stone, depending on the moveable arm before alluded to, will yield to the different movements of the kite. Thus, when a thunder-cloud happens to hover above the apparatus, and the electric matter finds a conductor in the metallic point attached to the top of the drake (see vol. iii. p. 53), all violent explosions will be obviated, and such dangerous fluid will quietly glide down along the wire connected with the string, till it spend itself in the ground.

As, however, this method of conducting the electric fluid is attended with considerable danger, if managed by unskilful hands, we think it our duty to suggest an additional precautionary measure, by which the whole may be regulated with perfect security to the person thus employed. After the main string of the kite (which ought to be from two to three hundred yards long) has been fastened to the stone in the manner above directed, its extremity ought to be ex-

tended on the ground: the other end of the leading-string should be previously passed through a small roller or pulley, connected with a ring, to which must be tied; 1. a silk cord coated with wax; and, 2, a small metallic chain of such length, that it may, when the kite is rising, touch the ground at the distance of 20 or 30 paces. Now the machine is suffered to ascend, till it begin to draw the main string; when the silk cord is allowed gradually to pass through the hand, till the chain, suspended on the ring of the pulley, be at a proper distance. Next, as the body of the drake rises, the operator ought to advance progressively towards the end of the string fixed to the stone, till at length the principal cord becomes completely distended. In this state of the machinery, the farther regulation may be safely entrusted to the balance of the stone, with its moveable arm turning on the pivot of the beam before described: by means of the *waxed* silk cord, the manager will be protected from the influence of the electric fluid gliding down the main string, while the metallic chain will afford security against accidental lightning. And, in order to promote the derivation of this fluid from the leading string of the machine, it will be advisable to connect another chain with the extremity of such string, projecting from the stone contiguous to the beam, so that it may thus be easily conducted into the ground, in the manner similar to that already pointed out, vol. ii. p. 48.

It has been remarked, by accurate observers, that the noise of thunder is not experienced oftener than 16 or 18 times in the year, at any fixed place. This phenomenon

not occurs most frequently in the months of May and July; namely, in the proportion of *three to one*, when compared with the months of April and September; but only in that of *two to one*, when contrasted with June and August. During the months of April and September, the number of thunder-storms is equal; and likewise in June and August. They arise generally with a south-wind; less frequently with a south-west; still more rarely with east and west; and scarcely ever with north, north-west, or north-east winds. It is also remarkable, that thunder-storms are the most violent, when proceeding from regions where they seldom occur; that they happen in the afternoon, or in the evening, more usually than in the morning; and are in mountainous districts more common than in a plain country.

When swallows pursue each other in flights, with a loud noise, early in the morning, it may be considered as an almost certain indication of an approaching thunder-storm: many persons, also, feel a peculiar heaviness and languor, previously to tempestuous weather; and, though such sensations subside only when the clouds break forth in torrents of fire or rain, yet we are inclined to ascribe these symptoms to some diseased action in the animal frame, or to a preternatural susceptibility of nervous impressions.—In short, if due attention were paid to the changes taking place among animals and plants; previously to the formation of thunder and lightning, we could, perhaps with the greatest precision, foretel their approach.

Lastly, to prevent unfortunate accidents during thunder-storms,

we would seriously advise every person to keep at some distance from trees, and rather to expose himself to a shower. While in a room, it will be proper to avoid the fireplace, fire-irons, gilded mouldings, and all articles containing metallic ingredients.—See also vol. iii. p. 99.

THYME, or *Thymus*, L. genus of spicy plants, comprising 17 species, of which the following are the principal, namely:

1. The *serpyllum*, COMMON, WILD, or MOTHER-OF-THYME, an indigenous perennial, growing on heaths and mountainous places, where it flowers in July and August.—This plant possesses a grateful aromatic odour, and a warm, pungent taste: its dried leaves, when infused in boiling water, serve as an agreeable substitute for tea: the essential oil obtained from this herb is so acrid, that farriers employ it as a caustic.—A little cotton wool moistened with it, and put into the hollow of an aching tooth, frequently mitigates the most excruciating pain.—Bees eagerly visit the aromatic leaves of wild thyme, which is likewise eaten by sheep and goats, but refused by hogs.—There is another variety of this species, cultivated in gardens, and called the *Lemon-thyme*, which has broader leaves, and a more pleasant flavour.

2. The *Acinos*, WILD BASIL, or BASIL THYME, grows on dry hills, in chalky and gravelly situations; flowering from June to August.—This odoriferous plant is much frequented by bees, which collect honey from its flowers.

3. The *vulgaris*, or GARDEN-THYME, is originally a native of the southern parts of Europe, but is now generally cultivated in British gardens. It may be propagated

gated either by the seed, by off-sets from the roots, or by slips, planted in light, rich, and well-prepared soils: its aromatic leaves are employed in broths, and for other culinary purposes.—In its medicinal properties, this species is one of the most powerful aromatic plants; and its essential oil is often sold in the shops, as a substitute for that of MARJORAM.

TICK. See SHEEP, p. 60, of the present volume.

TIDE, denotes the rising and falling of sea-water; a phenomenon which is observable on all the shores of the ocean: it is also termed the *flux* and *re-flux*, or the alternate *ebb* and *flow*.

The water of the sea flows for about six hours from south to north; during which period it gradually swells, so that it enters the mouths of rivers, and counteracts the natural current from their sources. It then remains stationary for about a quarter of an hour; after which it ebbs for six hours; a similar pause of 15 minutes takes place, when it flows, and ebbs alternately. Thus, the tide rises and falls once in the space of 12 hours and 48 minutes, which period constitutes a *lunar day*; as the moon passes the meridian of the earth about 48 minutes later, each succeeding day. The motion of the tides is further influenced by the moon: hence, if that luminary be in the first and third quarters, or when it is *new* and *full*, they are high and swift, being then called *spring-tides*: on the contrary, when the moon is in the second and last quarters, they neither rise so high, nor flow with such rapidity; and are therefore termed *neap-tides*.

Various theories have been formed, to account for the phenomena

of tides; the ancients attributing them to the *sun*; while some modern inquirers ascribe them to the liquefaction of the ice and snow, in the polar regions; but they are now generally understood to depend on the principle of *gravitation*.

In the 1st vol. of the *Repertory of Arts*, &c. we meet with an account of a *Tide-wheel*, that may be adapted to any kind of mill; and which was invented by Mr. ROBERT LESLIE. As a mere description of its constituent parts would convey but an inadequate idea of its mechanism, the curious reader will resort to the work above cited; where the whole contrivance is illustrated with an engraving. We shall, therefore, only remark, that such wheel, if intended for mills, is by the inventor stated to be preferable to all others turned by the tide; for its velocity is not only greater and more uniform, but a similar quantity of water also constantly acts on the wheel, which is so constructed, as to turn the same way, both with the ebb and flow, and in a more simple manner than any hitherto contrived. Thus, it moves *horizontally*, while the generality of tide-wheels revolve *vertically*; and the perpendicular shaft may be carried to such a height, as to admit the spur-wheel, or any other piece of mechanism, to be wholly above the surface of the water.—Lastly, it is asserted to be less expensive than other wheels of a similar construction, and may be advantageously employed for raising water; its velocity being fully sufficient, without any cog-wheels, or wallowers.

TILE, a kind of thin brick, principally employed for covering the

the roofs of houses; though it is sometimes used for paving cellars, kitchens, areas, &c.

Tiles are divided into various sorts, according to the purposes to which they are applied. Thus, *Plain tiles* are chiefly used for covering houses: and, by the 17 Edw. IV. c. 4, they ought to be $10\frac{1}{2}$ inches in length, $6\frac{1}{2}$ in breadth, and $5\text{--}8$ ths of an inch in thickness.—*Ridge-tiles* are of a semi-cylindrical form, and, by the statute, must be 13 inches in length, and also $6\frac{1}{2}$ inches in breadth: they are chiefly laid on the ridges of houses.—*Corner-tiles* are first made flat, in the manner of plain tiles, excepting that they are quadrangular; the two sides forming right lines; and their ends, arches of circles: previously to burning, they are bent on a mould, like ridge-tiles; and ought to be $10\frac{1}{2}$ inches in length, and of a convenient size, being generally placed on the corners of roofs.

There are many other sorts, known under the names of *Dutch*, or *Flanders*, *crooked*, *pan-tiles*, &c.: but as only those first-mentioned are at present employed for cleaning knives, &c. we shall merely add, that on importation, they pay a duty of 15s. 5d. per thousand.

Lastly, the manner of working the clay, and burning the tiles, being nearly similar to that followed in the manufacture of BRICKS, we refer the reader to vol. i. pp. 348-49.

TILLAGE, in agriculture and gardening, denotes the different methods of moving the ground, by means of a plough, spade, or other implement, to a certain depth, so as to bring the soil to the surface, and to turn the upper part down-

wards; in consequence of which, the earth is less liable to be exhausted by the growth of weeds or useless plants.

The proper time for this operation, varies according to the nature of the soil: thus, in *horticulture*, hot and dry ground should be tilled, either immediately before or after rain; but, if the weather be very dry, it ought not to be stirred, unless it be speedily irrigated: in the contrary case, when the earth is strong, moist, and cold, it will be useful to employ the spade, &c. during the hottest weather.

In *agriculture*, the cold, moist, clayey, or stiff soils, generally require to be tilled *three* times, namely, in the spring, in summer, and at seed-time, for wheat; and *four* times, for barley.

The great advantages arising from tillage, consist, 1. In the pulverization of the soil, so that its nature may eventually be changed, and the toughest clay be rendered as light or friable as common earth; and, 2. In eradicating noxious weeds, by exposing their roots and stalks to the joint action of the air, moisture, and heat, by which they are converted into manure. On these principles, indeed, the new, or *horse-hoeing husbandry*, chiefly depends; and, though perhaps some agriculturists may have extolled rather too highly, the benefits derived from frequent stirring of the ground, yet it cannot be denied, that such practice greatly contributes to the improvement of the soil, especially when combined with the judicious application of manures.

Having already, at some length, described the various modes of cultivating the soil, the reader will revert

severt to the articles, DRILLING, HARROW, HOB, PLOUGH, SPADE, &c.

TIMBER, a term denoting every species of wood, that is felled and seasoned, with the view of being employed in building houses, vessels, and other structures.

Of the different kinds of timber-trees, such as OAK, ASH, BEECH, &c. we have already treated in the progress of this work, and stated the most appropriate methods of rearing them: hence, we shall at present confine our attention to the proper times for felling, seasoning, and preserving timber.

The age at which timber-trees ought to be cut down, varies according to their nature, and the purposes for which they are designed. —Mr. MARSHALL observes, that poplars may stand from 30 to 50 years; ash and elm-trees, from 50 to 100 years; but oaks should on no account be *felled*, till they have attained the age of from 100 to 200 years. The durability of timber, however, depends on the soil and sub-soil, on which the trees have been produced: thus, in loose or absorbent lands, the oak and elm decay at an earlier period than those grown in cool and more retentive ground; but, in dry loams with a rocky sub-soil, the oak rapidly decays, after it has attained the age of two centuries. —Further, the CYPRESS, CEDAR, and MAHOGANY, are supposed to be indestructible by time, or the depredations of insects, in whatever exposure they may have been raised; and the ALDER endures the action of water, for many years longer than any other species of timber: hence it is deservedly employed

for piles in constructing dams; in order to secure the banks of rivers;

The season for felling oak, or fir-timber, commences toward the end of April; though the winter is often preferred for that purpose, and likewise for cutting down ash and elm-trees; as it furnishes labour to persons who would otherwise be unemployed. All branches or limbs, that may injure the trees in their fall, ought previously to be lopped, and the trunk cut down close to the ground, unless it be grubbed or rooted up; which latter method is preferable, as well as more profitable; because timber, produced from old stocks, is of inferior value.

After the trees are felled, it will be advisable to *season* them, previously to *working* the timber: it has, therefore, been recommended to pile them, one upon another, with small blocks of wood between each, in an open but not too exposed situation; so that the sun and air may penetrate every part; the surface, or uppermost trees, being plastered with cow-dung, to prevent them from cracking. Another method is that of burying the timber in the earth; but the most effectual mode of seasoning it, by *heat*, is performed at Venice, where the trees are exposed to a strong fire, at which they are continually turned round by means of an engine, till they become *charred*, or covered with a black crust: by this expedient, the internal part of the wood is so hardened, as to resist equally the effects of earth and water, for a long series of years, without receiving any injury.

When boards or planks have been properly dried, additional care becomes necessary to preserve them against

against the depredations of worms, the effects of air, moisture, &c. For this purpose, Mr. EVELYN directs common sulphur to be put into a glass retort, with such a portion of aqua-fortis, as will cover it, "to the depth of three fingers:" the whole must be distilled to dryness, and rectified two or three times. The remaining sulphur is then to be exposed to the open air on a marble, or in a shallow glass-vessel, where it will liquefy into a kind of oil, with which the timber must be anointed: this mixture, he asserts, will not only infallibly prevent the attacks of worms, but also preserve every kind of wood from decay or putrefaction, either in air or water.—Timber may also be defended from the influence of air, or moisture, by coating it two or three times with linseed oil; and some builders have advised the wood-work to be *painted*: the latter practice, however, ought to be adopted with great caution; because, though it may in some cases be proper, it should always be deferred, till the planks and similar articles have become perfectly dry.

Lastly, no *green* timber must be employed for any purpose; as it is apt to crack and splinter, when the work is completed; and will thus disfigure the most expensive buildings. Where such deformity occurs, it has been recommended to anoint the wood repeatedly with a solution of beef-suet: some carpenters, indeed, close the crevices with a composition of grease and fine saw-dust; but the former method, in the opinion of M. CHOMEL, deserves the preference; as he has seen riven or split timber so perfectly closed by such expedient, that the defect was scarcely perceptible: this operation, however,

ought to be performed while the wood is green.—See also BOARD, and DRY-ROT.

Timber used for buildings, especially for ships, bridges, canals, granaries, and stables, may be effectually preserved from decay, and particularly the *rot*, by repeatedly impregnating the wood with strong brine, or a solution of common salt. This simple process is attended with such decided advantage, that wood, thus prepared, will remain perfectly sound for ages. An instance of this fact lately occurred in the theatre at Copenhagen, where the lower part of the planks and joists formerly required to be replaced in a few years, till Mr. VOLMEISTER, an architect of that city, discovered and employed the process above stated. Since that period (which includes the term exceeding 12 years) the wood, on removing one of the boards, was found in such a state of preservation, that he could not observe the least appearance of decay.

In October, 1795, a patent was granted to Mr. CHRISTOPHER WILSON, for a method of combining timber; which may be applied to the improvement of naval architecture, and likewise to all large erections of wood.—For a minute account of this invention, and of the principles on which the patentee proceeds; we are obliged to refer the curious reader to the 9th vol. of the "*Repertory of Arts*," &c. where the whole is illustrated by an engraving.

TIME, in general, denotes either the succession of natural phenomena, occurring in the universe; or, according to Mr. LOCKE, it is a mode of duration which is marked by certain periods or measures, but principally by the motion and revolution

tion of the sun : some philosophers, however, have lately defined time to be the duration of a thing, the existence of which is neither without beginning nor end.

Consistently with our plan, we cannot enter into any *speculative* disquisitions respecting the nature of time : we shall, therefore, only remark, that it has been divided into *astronomical* and *civil* ; the former being regulated entirely by the motion of the celestial bodies ; while the latter division comprehends the astronomical time adapted to the purposes of civil life ; and is distinguished by years, months, days, hours, minutes, and seconds.

Few reflections are of greater importance than those on the transitory nature of time ; which is perhaps the only thing in the world, that is absolutely irrecoverable : hence, we are often surprized at the conduct of those who, under the mistaken notion of *killing time*, contrive and pursue every species of dissipation, in order to suppress the occasional warning of their degraded understandings, to stifle the remaining sense of their duties, and in a manner to forget themselves as rational agents, who are appointed to fulfil certain purposes, by which they might distinguish themselves from the brute creation. Nevertheless, a moderate participation in the amusements of the day, or the enjoyment of *select company*, is highly commendable ; but, when such indulgence exceeds the limits of prudence, it not only deserves severe censure, but is ultimately attended with bitter remorse.

TIME-PIECE, a term including clocks, watches, and other contrivances, for measuring the pro-

gress, or ascertaining the duration, of time.

The ancients were not acquainted with other time-pieces than the common *sun-dial*, and *water-clocks*, or vessels filled with any liquid, which was allowed to descend in drops, so that the portion thus disengaged, in an imperfect manner indicated the length of time, which had elapsed : for these contrivances, *hour-glasses* were afterwards substituted.

The present mechanical time-pieces with the pendulum, were probably invented in Italy, towards the end of the 13th, or beginning of the 14th century ; but the smaller machines, called *watches*, were not known in Europe till the middle of the 17th century, when the steel spring was employed as a substitute for weights, and the spiral or regulating spring, instead of the pendulum. The merit of this invention is claimed by the city of *Nürnberg*, whence OLIVER CROMWELL was furnished with an oval watch, that is still shewn among the curiosities deposited in the British Museum. In England, these useful chronometers were first made by Dr. HOOKE ; and in Holland, by HUYGENS ; but the name of their original inventor is consigned to oblivion. Since that period, numerous improvements have been made by TOMPION, SULLY, LE ROI, BERTHOUD, GRAY, GRAHAM, and other artists, whose names we decline to register.

From the extensive utility of time-pieces, in measuring with exactness the periodical revolutions of planetary bodies, it was farther conjectured, that such machines might be advantageously employed for the purpose of ascertaining the longi-

longitude at sea. Various experiments have, by order of the British Government, been instituted with this design; but the most correct instrument, was that constructed by the late Mr. HARRISON, and denominated a *Time-keeper*; for which the Commissioners of the Board of Longitude, in 1764, awarded him the sum of 10,000*l.*, being one half of the premium which was promised by an act of parliament, passed in 1714, to the artist whose mechanical contrivance might be calculated to find the longitude at sea. Mr. H.'s admirable work did not vary more than 43" of time in a voyage from England to Jamaica: it was afterwards improved; and a time-piece, constructed on his principles, was sent out with Capt. Cook, in 1772; which, during the space of three years, did not differ more than 14½ seconds per diem; the remaining sum of 10,000*l.* was consequently paid to the inventor. Our limits not permitting us to enter into the *rationale* of its mechanism, the reader is referred to the *Principles of Mr. HARRISON's Time-Keeper*, &c. (4to, 1767, 5s. Nourse), in which its construction, as well as its application, are fully stated, and illustrated with plates.

Another *time-keeper* for ascertaining the longitude, was invented, a few years since, by Mr. ARNOLD, and which during a trial of 13 months differed only 6.69" during any two days. Its greatest variation would not have exceeded one minute of longitude, which might thus be computed with the same accuracy as the latitude can be determined. We understand, however, that this contrivance has not been introduced into the Navy.

TIMOTHY-GRASS, or *Phleum*,

L. a genus of plants, comprehending eight species, four being indigenous; of which the following are the principal, namely:

1. The *nodosum*, or KNOTTY TIMOTHY-GRASS, grows chiefly on the dry, hilly, pastures in the vicinity of Bath, and flowers in the month of June.—This species, in the opinion of Mr. SOLE, is well calculated for dairy-pastures; as it affords a large quantity of rich milk, and is eagerly eaten by cows. It is also relished by sheep and other cattle; though disliked by horses, where they find the meadow or fescue-grasses.

2. The *pratense*, or COMMON TIMOTHY-GRASS, thrives generally in moist pastures, and flowers in July. The culture of this grass has been strongly recommended by Mr. ROCQUE, in the 4th vol. of the *Museum Rusticum et Commerciale*. According to him, it is eaten by horses and cows, preferably to any other pasture-grass; though Dr. PULTNEY observes, that it is disliked by sheep, and is not relished by horses or cows: Mr. SOLE, and the Rev. Mr. SWAYNE, likewise, remark, that the Common Timothy-grass is very coarse, of little value for cattle, and does not deserve to be cultivated in England. Notwithstanding such diversity of opinion, we appeal to the authority of LINNÆUS, who expressly states, that Common Timothy-grass should be sown on lands, which have been newly drained; as it is very luxuriant, attains the height of 3 or 4 feet, and prospers in wet and marshy situations. Farther, we learn from BECHSTEIN, that its stalk grows to the height of 6 feet; that *horses*, and *swine*, are exceedingly partial to this grass; consequently, that it

it merits the attention of farmers; who wish to improve moist meadows over-grown with moss.

TIN, or *Stannum*, one of the imperfect metals, which is obtained principally from the county of Cornwall, where it is sometimes dug up in a *native* or pure state; though more frequently mixed with a large portion of arsenic, sulphur, and iron. The crude ore is first broken to pieces, and washed; then roasted in an intense heat, which dissipates the arsenic; and afterwards fused in a furnace, till it be reduced to a metallic state.

Tin is the lightest and most fusible of all metals: it is of a greyish-white colour; has a strong, disagreeable taste; and, when rubbed, emits a peculiar odour. It is also remarkably malleable; and, when beaten into very thin plates, or *tin-foil*, is employed in covering LOOKING-GLASSES. Farther, tin readily unites with copper, forming the compositions known under the names of BRONZE, and *Bell-metal*: by immersing thin plates of iron into melted tin, they become coated, and are then termed *Block-tin*, or *Latten*; which is manufactured into tea-canisters, and various culinary utensils.

Tin is likewise of use in medicine, both in the form of filings, and in a state of powder, especially as a *vermifuge*: it has often successfully expelled the tapeworm, which had resisted the power of many other drugs; but, the dose varying from a few grains to an ounce, it is one of those remedies which must be prescribed by the experienced practitioner.

TINCTURE, in general, denotes a solution of the more volatile and active parts of various bodies, from the three kingdoms of

Nature, by means of a proper solvent: see MENSTRUUM. This term is, however, more particularly applied to those spirituous preparations, which contain the resinous parts of vegetables, as well as their flavour and colour.

The usual solvents, employed for extracting the medicinal virtues of plants, are water, and rectified spirit of wine; the latter of which is frequently used for obtaining the active principles from resins and the essential oils, that yield them imperfectly to the former. With a view to make a tincture or *elixir*, the vegetable or other matter is usually bruised, put into a matrass, and the spirit is poured on it, to the depth of about two inches. The glass is then closed, and placed in a sand-bath for five or six days, or till the spirit become perfectly impregnated, and acquire a deep colour.—The quantity of a tincture, to be administered for one dose, varies according to its constituent parts; though it seldom exceeds a tea-spoonful, which is taken at such times as the nature of the complaint may require.

TINNING, is the process of coating copper vessels, chiefly used for culinary purposes: it is generally performed in the following manner:

If the copper be *new*, its surface is first scoured with salt and diluted sulphuric acid: next, pulverized resin is strewed over the interior part of the vessel; into which, after heating it to a considerable degree, melted tin is carefully poured, and a roll of hard-twisted flax is passed briskly over the sides and bottom, to render the coating uniform. For tinning *old* vessels, a second time, the surface is first scraped;

scraped, or scoured with iron-scales, then pulverized sal-ammoniac is strewed over it, and the melted tin is rubbed on the surface with a solid piece of sal-ammoniac. The process for covering *iron* vessels with tin, corresponds with that last described; but they ought to be previously cleaned with the muriatic acid, instead of being scraped or scoured.

In 1785, a patent was granted to Mr. JOHN POULAIN, for his new composition in the process of tinning culinary and other vessels. He directs 1 lb. of pure, or *grain-tin*; $1\frac{1}{2}$ oz. of good malleable iron; 1 dr. of platina; 1 dwt. of silver; and 3 gr. of gold; to be fused in a crucible, with 1 lb. of borax, and 2 oz. of pulverized glass; after which the mixture is to be cast into small ingots. To adapt such composition to the intended purpose, the patentee states, that it must be put into a metal mortar, placed over a charcoal fire, and pounded with a heated metal pestle; after which it should again be placed over the fire, in an iron mould, where the compound ought to be stirred, and suffered to cool. The vessel is then to be covered with tin and sal-ammoniac, as is usually practised; the part thus tinned must be well cleaned, and a coat of the composition above described be laid on with sal-ammoniac, in an uniform manner: next, the utensil ought to be gradually heated, that every part may be annealed; when it should be immersed in cold water, and the rough particles scraped, or rubbed off, and scoured with sand.—Mr. POULAIN's invention is ingenious, though too expensive, to be generally adopted: we therefore subjoin the following process, by which the vessels not

only acquire additional strength, but are also secured against the action of acids, for a longer period than is effected by the common methods of tinning: Let the utensil be cleaned in the usual manner, its inner surface be beaten on a rough anvil, that the tinning may more closely adhere to the copper; and let one coat of pure tin be laid on with sal-ammoniac, as above directed in the process for tinning old copper. A second coat, consisting of *two* parts of tin, and *three* of zinc, must next be uniformly applied with sal-ammoniac, in a similar manner: the surface is now to be beaten; scoured with chalk and water; smoothened with a proper hammer; exposed to a moderate heat; and, lastly, dipped in melted tin: by which means both sides will be tinned at the same time.—Such tinning is stated to be very durable, and to have a permanent beautiful colour, so that it may be advantageously used for various metal utensils and instruments, which may thus be effectually prevented from rust.

Lastly, as many families living at a distance from towns, either have no opportunity of sending their copper utensils to be re-tinned; or carelessly overlook such necessary repair, we think it useful to observe, that the whole process may be easily performed by servants, who possess common skill and dexterity. For this purpose, the vessel ought to be previously scoured, and dried; then exposed to a moderate heat, with such a portion of pure *grain-tin* as may be sufficient to cover the inner surface: when this metal is melted, a small quantity of sal-ammoniac should be strewed over it; and, immediately after,

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after, a whisk or roll of coarse and hard twisted flax must be employed, for spreading the composition uniformly over the sides and bottom of the vessel. To improve the coating, about a third part of zinc may be added to the tin; though the latter would produce the desired effect, if it could be obtained in a pure state.

TOAD, or *Rana bufo*, L. is the most deformed and hideous of the lower animals. Its body is broad, the back is flat, and covered with a dusky skin marked with pimples; its large belly appears inflated: on account of the short legs, its motions are slow, and its retreat is filthy.

Although the external appearance of this ugly creature inspires disgust, and even horror, yet it is asserted that the eyes of toads are remarkably brilliant. Insects of all kinds, and particularly flesh-maggots, and winged ants, afford food exceedingly grateful to toads.—Nevertheless, these dreaded animals possess no noxious qualities: on the contrary, it has lately been asserted, that they furnish the means of curing **CANCERS**, by *suction*. Mr. **PENNANT**, however, questions their efficacy, and remarks, “that they seem only to have rendered a horrible complaint more loathsome.”

Unless preyed upon by owls, buzzards, snakes, &c. the toad attains to a considerable age; instances having occurred of its living upwards of 30 years. Formerly, this animal was supposed to possess virtues both medicinal and magical; but the reputed toad-stones, or *bufonites*, with all their fanciful properties, have long been exploded.

TOAD-FLAX. See **FLAX** the **TOAD**.

TOBACCO-PLANT, the **COMMON**, or *Nicotiana Tabacum*, L. is a native of America, where considerable quantities are annually raised for exportation; and also in Spain, Portugal, Turkey, and Malta.

There are eight species of this narcotic plant, but the principal varieties are known under the names of *Oronokoe*, and *Sweet-scented Tobacco*: both attain the height of from six to nine feet; being distinguished only by their deep green leaves; the former of which are longer and narrower than those of the latter. If their culture were not restricted by the legislature (half a pole of ground only being allowed for such purpose, in *physic-gardens*; but, if that space be exceeded, the cultivator is liable to a penalty of 10*l.* for every rod), they might be propagated from seed, which ought to be sown towards the middle of April, in beds of warm, rich, light soil. In the course of a month, or six weeks, they must be transplanted into similar situations, at the distance of about two feet from each other. Here they should be carefully weeded, and occasionally watered, during dry weather. When the plants are about two feet high, they shoot forth branches; and, as these draw the nutriment from the leaves, it becomes necessary to *top*, or nip off the extremity of the stalks, in order to prevent them from attaining to a greater height; and also to remove the young sprouts, which continually shoot forth between the leaves and the stem.—No farther attention will be required, till the leaves

leaves begin to ripen; a change which is known, by their becoming rough and mottled with yellow spots, and by the stalk being covered with a species of down. The tobacco plants are now cut off closely to the roots, and exposed on the dry ground to the rays of the sun, till the leaves become *wilted*, or so pliant as to bend in any direction without breaking.—They are then laid in heaps under shelter, for three or four days, in order to *sweat*, or ferment; being turned every day; next, the tobacco leaves are suspended on strings, at a small distance from each other, for the space of a month; at the end of which they may be taken down, laid in heaps, and *sweated* a second time for a week, being then pressed with heavy logs of wood. The last operation is that of picking the leaves; when they are packed in hogsheads for exportation.

By the 29th GEO. III. c. 68, and the 31st GEO. III. c. 47, no tobacco is importable, excepting the produce of the British plantations in America, the United States, Spain, Portugal, or Ireland, in British ships, or in vessels legally navigated, and carrying at least 120 tons: nor must it be brought in casks, containing less than 450lbs. weight; 5lbs. of loose tobacco, however, being allowed for each of the crew: in contrary cases, both the ship and cargo are forfeited.—This drug is subject to the duty of 1s. 6½d. per lb. on importing it from the plantations of Spain and Portugal; but, if it be brought from Ireland, the United States of America, or from the British colonies in that country, it pays only 6½d. per lb. It is farther charged with an *excise duty* of 3s. per lb.

on importation from Spain and Portugal; but, if obtained from Ireland, or America, it pays only the additional sum of 1s. 1d. per lb.; so that in the former cases, the whole duty is 4s. 6½d.; and, in the latter, 1s. 7½d. per lb.

Uses:—Various properties have been attributed to this stupefying drug, since it was first introduced into Europe, about the middle of the 16th century. Its smoke, when properly blown against noxious insects, effectually destroys them; but the chief consumption of this plant, is in the manufactures of SNUFF and TOBACCO, or the cut leaves for SMOKING. It is likewise (though we think, without foundation), believed to prevent the return of *hunger*; and is therefore *chewed* in considerable quantities by mariners, as well as the labouring classes of people; a disgusting practice, which cannot be too severely censured. For, though in some cases, this method of using tobacco, may afford relief in the rheumatic tooth-ach, yet, as the constant mastication of it induces an uncommon discharge of saliva, its narcotic qualities operate more powerfully, and thus eventually impair the digestive organs.

As a *medicine*, the use of tobacco requires great precaution; and it should never be resorted to without professional advice: It is chiefly employed in clysters, and as an ingredient in ointments, for destroying cutaneous insects, cleansing inveterate ulcers, &c. Lately, indeed, Dr. FOWLER has successfully prescribed it, in the various forms of tincture, infusion, and pills, as a diuretic, in cases of dropsy and dysury:—if one ounce of the infusion of tobacco be mixed

with a pint of water-gruel, and injected as a clyster (being occasionally repeated), Dr. F. states, that it will afford great relief in obstinate constipations of the bowels.—The smoke has, for ages, been administered in the form of injection, as a sovereign remedy for the *dry-belly-ach*, prevalent in the West Indies.

Beside the varieties of this herb already described, there is another, termed ENGLISH TOBACCO, or *Nicotiana minor v. rustica*, L.: it is originally a native of America; but, having been raised in some British gardens for curiosity, its leaves are frequently substituted for the genuine drug. They possess similar narcotic properties with the HEN-BANE; and may be distinguished from foreign tobacco, by the pedicles which abound on them, and also by their smallness and oval shape.

It is remarkable, that the daily smoking of tobacco, is a practice which has only within the last century become general throughout Europe, especially in Holland and Germany; where it constitutes one of the greatest luxuries with which the industrious, poor peasants, as well as the more indolent and wealthy classes, regale themselves and their friends. In Britain, however, the lower and middle ranks, only, appear to be attached to such fumigations; which, though occasionally useful in damp and mephitic situations, are *always* hurtful to persons of dry and rigid fibres, weak digestion, or delicate habits; but particularly to the young, plethoric, asthmatic, and those whose ancestors have been consumptive; or who are themselves threatened with pulmonary diseases. In proof of this assertion, we shall only re-

mark, that a few drops of the oil distilled from the leaves of this powerful plant, taken internally, have operated as fatal poison: and, a considerable portion of such oil being disengaged within the tube of tobacco-pipes, during combustion, the noxious effects of inhaling and absorbing it by the mouth, may be easily inferred.—See also SMOKING.

Lastly, the *ashes* of tobacco may be applied to many economical purposes: they not only extirpate those small and noxious vermin, *earth-slugs*, but at the same time fertilize the soil, when strewed on it early in the spring.—Farther, by scattering them occasionally over the food of horses and geese, the health of these animals is said to be greatly benefited: they also afford a good tooth-powder; a strong ley; pot-ash; and an useful ingredient in the manufacture of glass.—We understand that considerable quantities of tobacco-ashes might be easily procured from the King's warehouses established for this merchandize, in London, and other sea-ports; where large parcels of *spoiled* leaves are frequently committed to the flames.

TOES. See CHILBLAIN, and CORNS.

TOLU, or BALSAM OF TOLU, an esteemed drug which is obtained from the *Tolujera balsamum*, L. a native of South-America, whence it is imported in small gourd-shells.

This balsam is of a transparent, reddish-brown or yellow colour; of a thick, tenacious consistence; and acquires such a degree of brittleness by age, that it may be easily reduced to powder. It possesses a very fragrant odour, slightly resembling that of lemons; and has a warm, sweetish taste.—The virtues

virtues of this drug correspond with those of the PERUVIAN BALSAM; but it is much milder than the latter, and therefore more frequently employed in affections of the lungs and chest, especially when combined with a decoction of white poppies, and the syrup either of marsh-mallows or pale roses.

TOM-TIT, a well-known diminutive bird, abounding in woods and orchards, where it constructs its nest with grass, &c. in which the female deposits from three to five very small eggs.

Tom-tits have erroneously been supposed to injure the young buds and blossoms of trees, on which account, large numbers are annually caught. They are, however, believed to be of great service to fruit-trees; and, though a few buds or blossoms may be occasionally destroyed by them, yet such damage is amply compensated; as innumerable insects are devoured by these birds; and which, insinuating themselves into the buds, would commit irreparable injury. Hence, the increase of tom-tits ought to be encouraged; as instances have occurred, where numbers of those harmless creatures had been taken in one year, after which the blossoms of trees were, in the succeeding spring, completely destroyed.

TON, or **TUN**, a measure of capacity, varying in its dimensions, according to the nature of liquid or solid articles: thus, a ton of wine contains four hogsheads; a ton of timber comprises a square of 40 solid feet: and a ton of coals amounts to 20 cwt.

TONGUE, in the animal economy, is an organized muscle situated in the cavity of the mouth, moveable in every direction, and destined for the purposes of speech,

mastication, deglutition, and suction. On the upper part, it is furnished with many small nervous warts, regulating the sense of taste: the whole is covered by the muciparous membrane lining the inside of the mouth; and which, by a duplicature at the lower part, forms the ligament called the *frenum*.—If this ligament be too short (which may be ascertained by the incapacity of the infant to protrude its tongue to the gums, and between the lips; or of sucking either the breast, or a finger introduced into its mouth) an incision should be made, by a person properly qualified; and the infant, immediately after, be placed to the breast; in order to prevent its swallowing the blood. A similar operation will be requisite, as the only mean of preservation, where a fleshy tumor occurs under the tip of the tongue.

Another affection is the *Ranula*, or swelling beneath, and at the side of, the tongue; which generally arises from an obstructed salivary gland: in some instances, it contains a gritty substance, but more frequently a fetid fluid, in consequence of which, the mouth becomes inflamed. Where it proceeds from tainted milk, the nurse ought to be instantly changed, and the mouth be washed with a decoction of sage sweetened with honey; but, if the tumor be hard, it will be advisable to extirpate it by the knife: after the operation, the mouth should be frequently rinsed with milk and water:—to promote the healing of the wound, gentle astringents, such as diluted tincture of bark or myrrh, will be useful, when given with due precaution.

Ulcers of the tongue are sometimes
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times produced by the sharp edges of the teeth : in this case, the latter must be filed off, and astringent gargles frequently employed.

A more serious malady is *Glossitis*, or *Inflammation of the Tongue*; the following are its symptoms :— A partial or general tumor ; the sides and lower surface are red, and uncommonly painful to the touch. Progressively, the patient's speech, swallowing, and respiration, become affected ; and, when the complaint is of a violent nature, the tongue is so tumefied that it fills up the cavity of the mouth : farther, if the inflammation should extend to the gullet, and thus impede respiration, a symptomatic sore-throat is often induced. An acute head-ach, and sometimes delirium occur, which may even prove fatal. More frequently, however, it terminates either by a resolution, or by a favourable suppuration ; though, in some instances, it is eventually followed by mortification, scirrhus, or cancer.

Causes :—Suppressed perspiration ; acrid substances taken into the mouth ; or, a deposition of morbid matter from other parts, for instance, in rheumatisms, scrophula, &c.

Cure :—While the patient is able to swallow, cooling aperients should be given ; and, if the symptoms evince crudities in the stomach and intestines, either emetics or purgatives, according to the seat of such accumulated matter, will, in the first stage, prove highly efficacious. Blisters, and other vesicatories, applied to the feet and arms ; or, in urgent cases, even to the neck, together with bathing the legs in tepid water, cannot fail to

be useful, by diminishing the inflammation. Warm, emollient fomentations around the neck, may also be resorted to ; and if the mouth be charged with phlegm or mucus, the fauces ought to be rinsed with a decoction of chamomile or elder flowers, to which a small quantity of sal-ammoniac may be added : for the same purpose, a decoction of figs in milk, will occasionally prove of service.—Should venesection be indicated, it will be preferable to draw the blood by means of cupping-glasses ; or, by applying leeches to the adjacent parts.—If a collection of pus, or an abscess be formed, the discharge must be promoted by an incision, as soon as the matter is sufficiently matured. But, where the inflammation terminates in a *SCIRRHUS*, or *CANCER*, the reader will find the proper treatment stated under those respective heads.

Lameness of the tongue, may originate from various causes : thus, if it proceed from worms, or suppressed piles, in the former case, vermifuges, and in the latter, such remedies should be resorted to, as tend to restore that salutary evacuation, by the mildest aperients : when this affection arises from violent passions, catarrh, or is symptomatic of palsy, it will be useful to employ electricity, setons, and blistering cataplasms to the skin (see *SINAPISM*), which have frequently been attended with success.

The *palate*, or sense of *taste*, may be depraved by organic affections, or atony of the parts ; by incrustations, for instance, in the thrush ; in consequence of warts on the tongue, from a vitiated saliva ; or the destruction of nerves
pro-

proceeding to this organ; and lastly, from catarrhs, by which the head is generally affected.

If such complaint be occasioned by impurities, the tongue should be frequently scraped and washed with a mixture of spring water, vinegar, and honey. A corruption of the saliva being mostly connected with other disorders, it will also be removed by the remedies employed for the cure of the latter: we shall therefore only add, that when it arises from tainted humours (evinced by frequent, foul eructations), the repeated use of thin slices of lemons, or oranges, with a little sugar; or, rinsing the mouth with a mixture of vinegar and lime-water, will often remedy such inconvenience.

Where the sensibility of the nerves is diminished, the chewing of horse-radish, sweet flag, and similar stimulants, has frequently proved beneficial.—See also DUM-NESS.

TONSILS, or vulgarly called *Almonds*, are two round glands situated collaterally at the basis of the tongue; each of them being provided with a large oval passage opening towards the fauces, whence a mucus is secreted for lubricating the mouth and gullet; such discharge being farther promoted by the action of the muscles, compressing these glands.

The principal affection incident to the tonsils, consists in an enlargement, unattended with pain; but which sometimes increases to such an alarming degree, as to threaten suffocation: in this case, relief can be obtained only by an operation. When the complaint, however, is consequent on inflammations of the adjacent parts, for instance, in the **QUINCY**, **SCARLET-FEVER**, &c. the

remedies directed under those articles, may then afford relief.

TOOL, a general term denoting any small implement, which is used both for manufacturing other complex instruments or machines, and also those employed in the mechanical arts.

Tools are divided into *edged-tools*, *spring-tools*, *pointed-tools*, &c. But, consistently with the advanced state of the present work, we shall only give an account of a patent, granted in January 1793, to Mr. **ARNOLD WILDE**, for making plane-irons, sickles, scythes, drawing-knives, and all other kinds of edged-tools, from a preparation of cast-steel and iron, incorporated by means of fire.—He directs a piece of wrought-iron to be previously heated in the fire, and hammered; after which it should be formed of the requisite size: it is then to be fixed in a mould of proper dimensions, and in such a direction that, when the cast-steel is poured into the latter, the iron may settle in the middle, or on either side. Next, the steel must be melted in a crucible exposed to a strong fire; and, when it is nearly in a fluid state, the iron should be prepared in a *welding heat*. After clearing it from scales, or other extraneous matters, the iron is again to be fixed in the mould, and the fluid steel poured into the vacancy left for that purpose; when the whole will be united into one solid mass.—The various tools, above-mentioned, may then be made of such compound metal in the usual manner; or by any method that should be deemed most convenient to the workman, or manufacturer.

TOOTH; and **TOOTH-ACH**. See **TEETH**.

TORMENTIL, the **COMMON**, or **SEPT-FOIL**, *Tormentilla erecta* v. *officinalis*, L. is an indigenous perennial, growing in moors, barren pastures, and shady places; flowering from June to September.—It is eaten by cows, goats, sheep and swine; but refused by horses.

The Tormentil is propagated by planting the crowns of its bulbous roots, at the depth of one inch, and at the distance of five or six square inches.—These roots are of great utility, both in domestic and in medical economy: on account of their strong astringency, they are advantageously substituted for oak-bark in tanning, and dyeing leather of a red colour, with the addition of the water-elder berries, and alum.—**LEYSSER** observes, in his *Original Botany* (7th century of his Collection of Plants, in German), that the inspissated red juice of this root may be employed as an excellent substitute for the foreign drug, called *Dragon's blood*, in dyeing, staining, &c.—Lastly, the tormentil-root has been found remarkably efficacious in the dysentery often prevailing among cattle; and, being one of the most astringent vegetables of our climate, it may, with equal advantage, be used for similar purposes by mankind.

TORTOISE, or *Testudo*, L. a genus of amphibious animals, comprehending thirty-three species, of which the following are the principal:

1. The *midas*. See **COMMON TURTLE**.

2. The *imbricata*, v. *caretta*, or hawk's-bill tortoise, is a native of South America; where it attains the length of three feet: its shell is divided into the upper part,

which covers the back; and the lower, for the protection of the belly: it is composed of thirteen leaves, or scales, that form the beautiful transparent substance, known under the name of *tortoise-shell*.

3. The *orbicularis*, or common river-turtle, inhabits the milder climates of Europe, particularly the swampy parts of Hungary and Slavonia; its size seldom exceeding eight or nine inches in diameter. It is covered with a smooth dark shell; lives in morasses; and spends the winter under ground, in a torpid state.—The flesh of this species is much esteemed on the Continent, where it is eaten by the consumptive and debilitated, on account of its restorative properties.

Turtles live on worms, insects, small fishes, and marine plants; they are reputed for their longevity, subsisting for twelve months on simple water, and evincing muscular action, after the head has been severed for a fortnight. Their progress through life is remarkably slow.

The best tortoise-shell pays, on importation, 1s. 4½d. per lb.: it is thick, transparent, of a deep lead-colour, resembling that of antimony, and is sprinkled with brown and white spots. Like horn, this shell becomes soft in a moderate heat, and is then manufactured into combs, and other articles; which may be easily stained of different colours, by tinctures made of the common dyeing drugs in spirit of wine; or by the solutions of various metals in the mineral acids.

TOUCH, or **FEELING**, is one of the five external senses, through the medium of which we are enabled to form comparative ideas of

of hard, soft, rough, smooth, hot, cold, dry, wet, or other tangible properties.

Having already explained the organism of the touch, in the article SKIN, we shall only remark, that the greatest attention to cleanliness is requisite, for *preserving* this sense; as it is liable to be impaired by negligence, cold, pressure, or any other object that tends to blunt the nerves, or to obstruct their influence. Farther, the *touch* is affected by the palsy, by apoplexy, and similar maladies that disorder the brain and nerves; though it may be recovered after the primary complaint is removed.—Lastly, if a defect of this sense proceed from any obstruction of the cutaneous nerves, it will be advisable to regulate the first passages, by appropriate purgatives, and then to administer, internally, mustard-seed, horse-radish, spirit of hartshorn, or other suitable stimulants. Considerable benefit may also be derived from the application of SINAPISMS, fresh nettles, and the use of the tepid bath.

TOUCH-ME-NOT. See BALSAMINE.

TOUCH-STONE. See GOLD, vol. ii. p. 382.

TOUCHWOOD, or SPUNK, *Boletus igniarius*, L. a species of fungus, or sponge, which grows on the trunks, particularly those of cherry and plum-trees; where it frequently extends to a size of from two to eight inches.

The substance of this vegetable is very hard and tough, of a tawny-brown colour, and is sometimes employed, both in England and in Germany, as a substitute for tinder: with this design, it is boiled in a strong ley, or urine, after which it is dried, and boiled a se-

cond time in a solution of saltpetre. It is also occasionally used as a STYPTIC; being collected in August and September; the hard external crust is separated, and the medullary part is beaten with a hammer, till it becomes soft.

TOURNIQUET, in surgery, an instrument composed of rollers, screws, straps, &c. for the purpose of compressing a limb, or other part of the body; in order to prevent too great an effusion of blood from wounds.

The tourniquet is one of the best contrivances in the art of *healing*: by compressing the blood vessels, it may be so regulated, as completely to check the farther efflux of that vital fluid, from wounded parts; and thus frequently to save a valuable life.

Without entering into a description of the various improvements that have lately been introduced into this essential part of operative surgery, we cannot omit to recommend to our readers, who are situated at a distance from professional aid, to provide themselves with this simple and useful instrument, which may be had, in the greatest perfection, of Mr. SAVIGNY, whom we have often mentioned on similar occasions. To persons travelling, or inhabiting warm climates, a tourniquet may prove of the greatest advantage; and we conceive it to be one of the most necessary articles in a *medicine-chest*, as well as in a *case of instruments*.

Where it becomes an object of importance, to suppress the bleeding from arteries of the lower extremities, without intercepting the circulation through the whole limb, the following ingenious method of applying a tourniquet has been recommended.

commended, as perfectly safe, by a skilful young surgeon in the metropolis. After providing a hard roll of linen bandage, about 4 or 5 inches in width, and 3 in thickness, as likewise a smooth board, 9 inches in length, 3 in width, and $\frac{1}{2}$ of an inch in thickness, with the sides and ends squared at right angles; the roller is to be placed mid-way in the ham on the under sides of the knee-joint; the leg being extended in a straight line. Next, the piece of board must be laid over the roller, which is to act as a pad of compression on the *popliteal* artery that extends from the ham over the hollow of the knee; the length of the board running cross-ways, and projecting on the knee-joint on each side. Now, the girth of the tourniquet is to go round the knee above (not upon) the knee-pan, and over the projecting ends of the board. The screw should rest at the upper part of the limb and the knee-pan, having also a pad interposed between it and the skin. By this mode of compressing the *popliteal* artery, an important advantage is gained; because it allows the arterial circulation to proceed uninterrupted through the lateral branching vessels; the large superficial veins are not disturbed; and the limb remains in the same state as if the artery alone had been tied.—In all cases of profuse hemorrhages, when there is a chance of saving the limb, such method of applying the common tourniquet, will be preferable to the usual manner, by which the circulation of the blood is entirely stopped. Farther, in gun-shot wounds, compound fractures, and secondary bleedings after amputation below the knee, the practice here suggested will gene-

rally be attended with the desired effect.

Having thus enlarged upon a subject, which materially relates to the safety of every individual, we shall only add (as supplementary to the article *STYPTIC*), that in accidental injuries, or wounds attended with profuse bleeding from large blood-vessels, we are not acquainted with a more simple and effectual remedy than the *Powder of Gum Arabic*. This mild application to the orifice of the vein, or artery, speedily forms an incrustation around the part affected; especially if it be immediately strewed over the spot from which the blood issues; and if the contiguous muscles be at the same time gently compressed, till a proper bandage, roller, or tourniquet, can be procured.

TOWER-MUSTARD, the **SMOOTH**, or **TOWER-WORT**, *Turritis glabra*, L. is an indigenous plant growing in gravelly meadows, pastures, and pits, where the stalks attain the height of two feet, and the greenish-white, large flowers appear in May and June.—The taste of this vegetable resembles that of *cresses*; and, affording wholesome food for cattle, we conceive it deserves the attention of cultivators, in the northern parts of the island, which abound with dry, stony lands and pastures. Farther, the flowers of the tower-wort supply the industrious bee with wax and honey.

TRAGACANTH, a gum obtained from the *Astragalus Tragacantha*, L. a thorny bush, growing in the Levant, in Candia, on Mounts Olympus, Ida, and Ætna: it pays, on importation, a duty of $3\frac{1}{2}$ d. per lb.

Tragacanth is incomparably stronger

stronger than gum-arabic: one dram of the former, dissolved in a pint of water, renders it of the consistence of syrup, while an ounce of the latter is required to produce a thick mucilage: hence it is preferred to other gums in forming lozenges.

Compound powder of Tragacanth, consists of this drug, of gum-arabic, and starch, each $1\frac{1}{2}$ oz. and 3 oz. of double refined sugar; which ingredients are conjointly pulverized.—This preparation is one of the mildest emollient remedies in hectic cases, troublesome coughs, strangury, and similar disorders, occasioned by a thin, vitiated state of the fluids; the dose being from $\frac{1}{4}$ to 2 or 3 drams, which may, according to circumstances, be repeated every hour, or at longer intervals.

TRAIN-OIL. See OIL.

TRANSFUSION OF BLOOD, an operation by which that fluid may be conducted from one animal body into another.

This singular and daring attempt was first undertaken by LIBAVIUS, at Halle, early in the 17th century: he recommended experiments to be made on calves, sheep, dogs, and other animals. After these had been successfully performed, a whimsical notion of prolonging human life, by the practice of transfusion, was publicly maintained, with almost general approbation by LOWER, in England; HOFFMAN, in Germany; DENIS, in France, and other bold physicians. But, when several persons unfortunately fell victims to such experiments, the flattering prospect completely vanished, till the late JOHN HUNTER resumed the subject, and treated it in a manner peculiar to his penetrating genius.

In performing the process of *transfusion*, the vein, which is usually chosen for blood-letting, was opened, and a quill, or other tube introduced in a perpendicular direction: the corresponding vein was then pierced in a healthy person, or more frequently in robust animals; and a similar tube was accommodated to the orifice in a slanting way; both tubes were then passed one into another, and thus the blood was gradually transfused; the vein being tied up, as is usual after venesection.

This operation is certainly ingenious; but, as it requires equal judgment and dexterity, we doubt whether it will ever become an useful branch of the healing art, in the *present* state of society: nay, it appears to us, that it cannot be performed with safety, since the introduction of the late *inoculations*, excepting in very desperate cases, such as hydrophobia, or other internal poisons, in which the whole mass of the blood is in a dissolved or tainted state. Besides, this essential fluid is, in every person, of a peculiar nature adapted to his own constitution; and consequently cannot, with reasonable hopes of success, be transfused into another: hence the visionary idea of renovating the animal spirits by artificial means, and of prolonging human life beyond the period appointed by Nature, must necessarily be defeated.—See also LIFE, LONGEVITY, &c.

TRANSPLANTATION, denotes the act of removing either CUTTINGS, layers, roots, or entire young plants, from one soil into another.

For this purpose, Mr. FORSYTH directs the side-shoots of trees to be *cut-in*; at different lengths, from one

one to three feet, according to their size, in the year before they are to be transplanted; allowing them to *grow rude*, that is, without being nailed in, or cutting either the side or *fore-right* shoots, during the whole summer. In the course of the winter, the ground ought to be opened around their roots, and the strong ones *cut-in*; after which they must be covered with soil. Thus, fine young fibres will strike forth; and, in the succeeding autumn, or during the winter (the sooner the better), they may be transplanted as *standards*; care being taken to place them, like all other trees which are to be removed into different soils, in a similar aspect, or towards the same point of the compass; but, if cuttings are designed to be planted against a wall, Mr. F. advises only the roots to be divided; as by such method a considerable saving will not only result, in time and money, but the trees also will bear fruit, in the first year after their removal. He remarks, that he has often transplanted old plum-trees that had been *headed down*, and consequently made very fine roots; which he divided, and "thereby obtained four or five trees from one, cutting them so as to form them into fine heads."—See also FRUIT-TREES, ORCHARD, (vol. iii. p. 315), and PLANTING.

TRAVELLER'S-JOY, HONESTY, VIRGIN'S BOWER, or GREAT WILD-CLIMBER, *Clematis Vitalba*, L. a hardy, indigenous shrub, growing in hedges and shady places, in calcareous soils, where it flowers in June and July.—It is easily propagated by layers or cuttings.

The fibrous stalks of this vegetable may be converted into *paper*:—the whole plant is very acrid to

the touch; on which account it is frequently employed as a caustic, and for cleansing old ulcers.—Both leaves and branches may, with advantage, be used in dyeing; and DAMBOURNET obtained from the latter alone, a yellow decoction.—BECHSTEIN observes, that the hard, compact, yellow, and odorous wood of this shrub, furnishes an excellent material for veneering.

TREACLE, the Common. See MOLASSES; and BÆR; vol. i. p. 237.

TREACLE, the VENICE, or MITHRIDATE, *Theriaca Andromachi*, a celebrated medley of drugs, composed of 60 ingredients; prepared; pulverized; and, with honey, formed into an *electuary*: it was reputed among the ancients to be a specific against poisons, and was formerly employed in intermittent, malignant, and other fevers. At present, however, it is superseded by the *opiate electuary*, which consists of purified opium, 6 drams; caraway-seeds, long-pepper, and ginger, of each 2 oz.; and three times their weight of the syrup of white poppy, boiled to the consistence of honey. The solid substances are to be pulverized, and the opium first separately incorporated with the syrup, over a moderate fire; when the other ingredients should be gradually added.—This composition is very powerful: the doses vary according to the age, sex, strength, and other circumstances; so that they ought to be regularly prescribed.

TREACLE-MUSTARD. See MITHRIDATE-MUSTARD.

TREACLE-HEDGE-MUSTARD, or Treacle Wormseed. See MUSTARD, the Hedge.

TREE, the largest of vegetable pro-

productions, rising to a considerable height, with a single stem.

Trees are divided into two principal classes, namely, *fruit*, and *timber* trees: the former includes all such as are raised chiefly, or entirely, for their edible fruit; an account of which, together with their mode of cultivation, the reader will find in alphabetical order, and also in the articles FRUIT-TREES, ORCHARD, &c.—The second division comprehends those trees, the wood of which is employed in ship-building, machinery, or for other useful purposes, such as the OAK, LARCH, &c.; the culture of which has been discussed under those respective heads.—See also TIMBER.

The growth of trees is a subject of considerable importance; but few accurate experiments have been made, in order to ascertain their *annual* increase in height and bulk.—In the *Philosophical Transactions of the Royal Society*, for 1788, Mr. BARKER states, as the result of his observations, that oak, and ash-trees, grow nearly in equal proportions, increasing about 1, or $1\frac{1}{2}$ inch every year. He remarks, that when the annual growth amounts to one inch in height, a coat one-sixth of an inch in thickness will accrue to the tree; and as “the timber added to the body every year, is its length multiplied into the thickness of the coat, and into the girth,” more timber is produced in proportion to the increasing thickness of the stem.

The health and vegetation of trees may be greatly promoted, by scraping them; by cutting away the cankered parts; and by washing their stems, *annually*, in the month of February or March.—Hence, Mr. FORSYTH, in his ingenious “*Treatise on the Culture and*

Management of Fruit-trees,” &c. (4to. 1l. 11s. 6d.; Longman and Rees, &c. 1802), recommends fresh cow-dung to be mixed with urine and soap-suds; and the composition to be applied to the stems and branches of fruit, forest, or timber-trees, in the same manner as the ceilings of rooms are white-washed. This operation, he observes, will not only destroy the eggs of insects, that are hatched during the spring and summer, but also prevent the growth of moss; and, if it be repeated in autumn, after the fall of the leaves, it will kill the eggs of those numerous insects, which are hatched during that season and the winter; thus contributing to nourish the tree, and to preserve its bark in a fine and healthy state.—A similar practice of washing and rubbing trees was devised, many years since, by Mr. EVELYN, and Dr. HALES, who direct it to be performed first with simple water and a scrubbing brush, and afterwards with a coarse flannel: the trees, thus managed, thrive uncommonly; and Mr. MARSHAM relates, that a beech-tree, between spring and autumn, increased $2\frac{5}{10}$ inches in thickness, which was one-tenth of an inch more than an unwashed tree.—Mr. FORSYTH’s mixture, however, is far preferable to common water; and, if the use of the latter fluid be attended with such beneficial effects, it may be rationally concluded, that the former will be productive of still greater advantages.

In common with other objects of the vegetable creation, trees are liable to a variety of diseases; which, if not timely attended to, eventually destroy them.—Having already treated of such affections, under the heads of *CANKER*, *MOSS*, &c.;

&c.; we shall in this place introduce a concise account of Mr. FORSYTH'S improved method of curing injuries and defects in fruit, or in forest trees; for which His MAJESTY has graciously rewarded him; on condition that it should be published. Mr. F. directs all the decayed, hollow, loose, rotten, injured, diseased and dead parts, to be cut away, till the knife extend to the sound or solid wood, so as to leave the surface perfectly smooth. The composition (prepared in the manner described vol. i. p. 68, and rendered of the consistence of thick paint, by adding a sufficient quantity of soap-suds and urine) should then be laid on with a painter's brush, to the thickness of about 1-8th of an inch, and the edges *finished off* as thin as possible. Next, five parts of dry pulverized wood-ashes should be mixed with one part of bone-ashes, previously reduced to powder; and then be put into a tin-box, the top of which is perforated with holes: the powder must be sprinkled over the surface of the composition, being suffered to remain half an hour for absorbing the moisture; when an additional portion of the powder should be gently applied with the hand, till the whole plaster acquire a smooth surface.—As the edges of such excisions grow up, care ought to be taken, that the *new* wood may not come in contact with the *decayed*; for which purpose, it will be advisable to cut out the latter, in proportion as the former advances; a hollow space being left between both, in order that the newly-grown wood may have sufficient room to extend, and fill up the cavity, so that it in a manner forms a new tree. By this process,

old and decayed pear-trees have, in the second summer after its application, produced fruit of the best quality, and finest flavour; nay, in the course of four or five years, they yielded such abundant crops, as young healthy trees could not have borne in 16 or 20 years. By such treatment, likewise, large, aged elm-trees, all the parts of which were broken, having only a small portion of bark left on the trunk, shot forth stems from their tops, to the height of above 30 feet, within six or seven years after the composition had been applied.—Thus it appears, that both forest and fruit-trees may be *renovated*, and preserved in a flourishing state; while the latter may be rendered more fruitful than at any former period.—We regret that our limits confine us to the present short account, and refer the reader to Mr. FORSYTH'S Treatise above cited; which is illustrated with 13 elegant engravings.

TREE-MALLOW, the SEA, or VELVET-LEAF, *Lavatera arborea*, L. an indigenous biennial, growing on the sea-shores, where it flowers from July to October.—This being the only native species of eleven plants, belonging to the same genus, we shall briefly remark, that all the Tree-mallows deserve to be more generally cultivated, both in gardens and fields; not only for their elegant flowers, which abound with honey, but chiefly for the valuable material obtained from their fibrous stalks:—We learn from BECHSTEIN, that such stalks may, with equal advantage, be converted into *paper*, and pack-thread or *bass*, serving as a substitute for hemp.

TREFOIL, or *Trifolium*, L. a genus of fifty-five species, 16 of which

which are indigenous: of these we shall mention the following:

1. The *pratense*, or Common Clover;

2. The *medium*, v. *alpestre*, or Red, Perennial Clover;

3. The *procumbens*, v. *agrarium*, Hop-clover, or Hop-trefoil; and

4. The *repens*, or White Clover. See vol. ii. pp. 9—12.

5. The *Melilotus officinalis*, or Melilot-trefoil. See MELILOT the Common.

6. The *arvense*, or Hare's-foot Trefoil, grows in sandy pastures, corn-fields, and chalky situations; where it flowers in July and August. This species is strongly aromatic; and, when dried, retains its odour for a considerable time:—it affords a grateful food to cattle; and is, by BECHSTEIN, recommended as a valuable substitute for oak-bark, in *tanning*-leather.

7. The *fragiferum*, or Strawberry Trefoil, thrives in moist meadows, chiefly in the vicinity of London, where it flowers in August.—This perennial vegetable is industriously cultivated by the Greenlanders, who propagate it by seed, and also transplant the stalks, which thus attain the height of seven feet. Its whitish and reddish flower-heads are nearly globular, and slightly compressed on the upper surface. The whole plant affords as nutritive food to cattle as the Common or Meadow-clover.

TREFOIL, the COMMON BIRD'S-FOOT, or *Lotus corniculatus*, L. an indigenous perennial, growing in meadows, pastures, heaths, and road-sides, where it flowers from June to August.—This plant is eaten by cows, goats, and horses; but, according to LINNÆUS, is not relished by swine or sheep; though it is propagated in Hertfordshire as pasturage for the latter

animals.—Dr. ANDERSON strongly recommends it to be cultivated for cattle; and Mr. WOODWARD remarks, that it may be raised to great advantage; as it attains a considerable height in moist meadows, and makes good hay.—Its flowers, when dried, acquire a greenish cast; in which respect, they resemble those of the plants producing INDIGO: it is, therefore, probable, that they may be advantageously employed for obtaining a substitute for that expensive dyeing material.

According to BRADLEY, an infusion of the seeds, flowers, and leaves of the Common Bird's-foot, in wine, operates as a diuretic; and at the same time tends to allay the irritation of the urinary canal.

TROUT, or *Salmo fario*, L. a fish inhabiting the British lakes and rivers: its head is short and roundish; the tail is broad, and the mouth of a large size; the whole body attaining from one to two feet in length, and weighing from 5 or 6 oz. to 4lbs.

Trouts are extremely voracious; preying on small fishes, insects, and even shell-fish: they likewise, occasionally swallow gravel, or small pebbles, to assist the comminution of testaceous food.—There is a species caught in certain lakes in Ireland, called *gillaroo trouts*, that are remarkable for a muscular substance found in their stomachs, which occasionally forms a dish at the Irish tables, under the name of *gizzard*; on account of its resemblance to that organ of digestion in birds.

Trouts are taken at all seasons of the year, but are most palatable during the summer; for their flesh, in the winter, is white and insipid; in the former season, it is fat, and of a reddish hue:—to the angler, they

they afford excellent diversion, which is so eagerly pursued, that the liberty of fishing in some of the streams near the metropolis, is sometimes rented at 10l. per annum. In Cumberland, great numbers of trout are potted with the CHARR, and sent to the London market.

The proper season of angling for trout, is in the months of June and July; when a stout rod and line baited with two lob-worms, is used for the larger kind of these fish, in a dark night; and is generally attended with success. As the usual method differs in no material respect from that of taking CARP, we refer the reader to vol. i. p. 437.

The flesh of trout affords food of a very fine flavour, and is easily digested. Those of a large size, procured from clear rapid streams, with a gravelly or stony bed, generally cut of a deep salmon colour, and are esteemed for their superior delicacy.—There is a species termed the *White Trout*, caught chiefly in the river Esk: the flesh of this fish, in dressing, acquires a reddish tint, and is much valued.

TROY-WEIGHT, is that mode of weighing certain commodities, in which the *pound* contains *twelve* ounces, each of them being divided into *twenty* penny-weights. and the latter into *twenty-four* grains each: on the contrary, a pound of *avoirdupois* consists of *sixteen* ounces; so that each oz. has *eight* drams, or drachms; each dram, *three* scruples; and each scruple, *twenty* grains.—See also **AVOIRDUPOIS** and **WEIGHT**.

TRUE-LOVE. See **HERB-PARIS**.

TRUFFLE, or **TRUBS**, *Lycoperdon tuber*, L. (*Tuber cibarium* of Dr. WITHERING), is a species of puff-ball, which grows under ground, without any roots or the

access of light; and attains a size of from a pea to the largest potatoe. In Britain, however, it is of a globular form, resembling that of a large plumb; and, when young, its surface is whitish; being interspersed with elevated dots, the centre of which contains a brown powder, similar to that of the common **PUFF-BALL**: as it becomes old, the colour turns black.—This species of fungus may be searched for in hilly forests, which have a sandy or dry clayey bottom, at the depth of four or five inches in the earth; though it seldom exceeds four or five oz. in weight, while those produced on the Continent, frequently weigh from eight to sixteen ounces.—It is one of the most wholesome and nutritive of the esculent fungi, and is generally discovered by means of dogs, which are taught to scent it; so that, on smelling the truffle, they bark, and scratch it up.—In Italy, it is likewise rooted up by pigs, which are either furnished with a ring around their snout; or, it is taken from them by an attendant.

Truffles are highly esteemed at the tables of the luxurious, where they are served up, either roasted in a fresh state, like potatoes; or, they are dried, sliced, and dressed as ingredients in soups and ragouts. The most delicious are internally white, and possess the odour of garlic.—They pay, on importation, a duty of 2s. 5½d. per lb.

TUBE-ROOT. See **MEADOW-SAFFRON**.

TULIP, or *Tulipa*, L. a genus of plants comprising four species, the principal of which is the *Gesneriana*, or Common Garden Tulip, a native of Cappadocia.—It is divided into two sorts, termed the *early*, or dwarf spring tulips, which blow in the beginning of spring; and

and the *late flowering* tulips, that appear about the latter part of April, or in May and June. Both sorts comprehend numerous varieties, such as *black, golden, yellow, purple-violet, rose, vermillion, &c.* from their respective colours. They are highly valued by the curious in horticulture, and sold by florists at from 5s. to 20l. per root, according to their rarity, or the degree of estimation in which they are held.—In Holland, they form a considerable article of trade; and there are instances of single bulbs of these flowers having been purchased at the extravagant price of from 2000 to 5000 guilders.

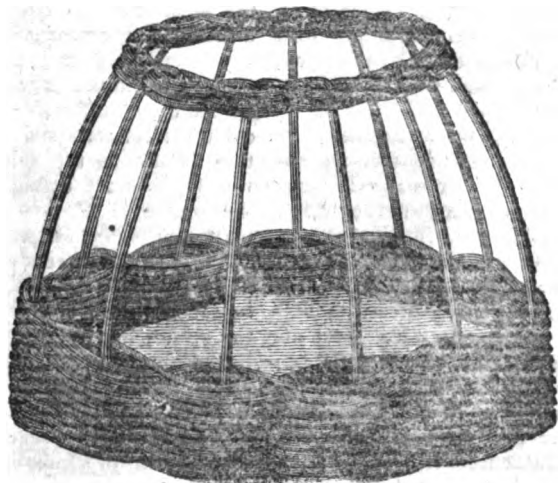
Tulips furnish one of the principal ornaments of the garden: they are propagated by planting offsets from the bulbous roots, in common garden soil, either in autumn, or towards the end of December, according to their early or late periods of flowering; and, if such soil be changed every year, new varieties, both of single and double tulips, beautifully diversified with various colours, may

easily be obtained: these plants require only to be sheltered, during the severity of winter; to be kept clear of weeds; and to be watered occasionally in the long droughts of summer.

There is an indigenous species of this plant, termed the *sylvestris*, or WILD TULIP, which grows in chalk-pits; and is found chiefly in the vicinity of Norwich, and Bury; where its small fragrant yellow flowers blow in the month of April. The fresh root is acrid, and excites vomiting; but, when boiled, it may safely be eaten with the addition of butter and pepper; affording a palatable dish.

TUMBREL, a machine employed chiefly in the county of Lincoln; for the purpose of giving food to sheep, during the winter:

In the 4th vol. of the "*Repertory of Arts*," &c. we meet with a description of a contrivance which is equally simple and useful: we have, therefore, been induced to give the annexed Cut, representing its structure.



It consists of a circular cage or crib, which may be made of willow, osiers, or similar pliant brush-wood. The whole is ten feet in circumference, being closely wattled to the height of one foot, above which it is left open for the space of about 18 inches; when it is again wattled to the height of 8 or 9 inches; an opening, 18 inches broad, being left at the top, for the purpose of putting in turnips, or other provender. The staves, forming the skeleton of the machine above represented, are 10 inches apart, so that 12 sheep may feed at one time in each tumbrel.

Considerable advantages are derived from this method of feeding sheep; as it greatly reduces the expence of provender, which is thus prevented from being soiled with dung, or trodden under foot. In such a state of separation, the stronger animals cannot drive away the weaker sheep; each being secured by the head, while they are eating. Farther, the construction of the tumbrel being attended with no difficulties, it may be readily procured, and be daily conveyed to any part of a farm: if proper care be taken, this utensil may be preserved in constant use, for eight or ten years.

TUMOR, or **SWELLING**, in animal economy, denotes an enlargement or preternatural tumefaction of any part of the body; and is either of an *indolent* nature, such as **CANCER**, **SCHIRRUS** and **SCROPHULA**; or *inflammatory*, as occurs in the female breast, in chilblains, and various other local affections.—With respect to the latter, we refer to the article **INFLAMMATION**; and, as most of the former are distinguished, either by the cause from which they arise, or by other circumstances, whence

they have received particular denominations, we shall in this place only give a few directions, relative to the treatment of indolent tumors in general.

When swellings of this nature gradually appear on any part of the human body, and are not attended with either pain or inflammation, the mode of discussing them entirely depends on their situation. Thus, when the glands are swollen, cold astringent fomentations, or saponaceous and mercurial plasters, conjoined with cold-bathing, especially in sea-water, will generally be attended with good effects. If the tumor be situated on muscular or fleshy parts, warm fomentations have often been found of service; on bony or tendinous parts, gentle friction, and afterwards moderate compression, are in most cases sufficient to remove the obstruction.

TUNBRIDGE-WATER, a chalybeate mineral fluid, obtained from numerous springs that rise at Tunbridge, in the county of Kent. When first drawn from the well, it is transparent, being divested of all colour; not emitting any peculiar odour; and tasting slightly of iron. If exposed for several hours to the air, this water evolves numerous small bubbles, that adhere to the sides of the vessel; becomes turbid; and, in the course of 24 hours, its properties are totally dissipated. Hence Dr. HALES recommends five drops of the aromatic acid of vitriol, to be added to each bottle containing the water; as, by this expedient, its chalybeate ingredients may be preserved for two or three months, when carried to distant places.

The Tunbridge-water is asserted to be of eminent service in irregular digestion; flatulency;

in the incipient stages of those chronic disorders, which are attended with great debility; in chlorosis; and numerous other complaints incident to the female sex. The dose varies at each time, from half to three quarters of a pint, according to the age, constitution, and case of the patient: it is taken at two or three intervals, between 8 o'clock in the morning and noon. As this water is apt to produce a sensation of coldness in the stomach, together with nausea or sickness, when drunk *fresh* from the well, it will be advisable to pour it into a bottle; and, after closing it carefully with a cork, to immerse the vessel in hot water, where it will acquire a moderate warmth; and thus such inconvenience may be easily obviated. Sometimes, however, this chalybeate occasions pain in the region of the heart; a slight degree of giddiness; and a sense of fulness over the whole body; but these symptoms generally disappear in a few days after commencing a regular course; when it produces effects totally different, by increasing both the appetite, and the circulation of the blood, while the animal spirits are said to be improved.

There are many chalybeate springs in England, possessing similar properties with the Tunbridge-waters; but which our limits will not permit us to specify: we shall therefore only notice the *Islington*, or *New Tunbridge Spa*, in the vicinity of the metropolis. It is of a ferruginous taste; and, when first drunk, occasions a slight degree of vertigo, and a propensity to sleep, in persons of plethoric habits; but such symptoms may be prevented, by adding a small

portion of pure water. Farther, the Islington chalybeate parts with its volatile ingredients within two hours after it is drawn: it will, therefore, be advisable to drink this fluid, if possible, on the spot; or, where such method is impracticable, to adopt the expedient before suggested by Dr. Hales.— The New Tunbridge Spa may be safely resorted to by persons labouring under the complaints before mentioned, especially in scrophulous, and other glandular obstructions; as likewise with the view of reducing *corpulency*.

Those who are situated at too great a distance from mineral springs, may prepare such water artificially, by dissolving six grains of the salt of steel, or vitriolated iron, in one pint of common water. This solution possesses, though in a weaker degree, similar properties to those of the Islington Spa.

TUNNY, or *Scomber Thunnus*, a fish of the mackerel kind, which abounds in the Mediterranean Sea, and sometimes frequents the British coasts: during the HERRING season, considerable shoals are found in the lochs or lakes of Scotland, whither they resort in pursuit of that fish. The tunny is from six to ten feet in length; its round body is bulky; and the tail forms a crescent.

These fish are taken either with nets, or by hooks appended to ropes; and baited with herrings. In a fresh state, their flesh resembles raw beef: when boiled, it becomes pale, and acquires a delicate flavour, similar to that of salmon. The belly, however, is the part held in the greatest esteem, and which is mostly salted; but, being extremely fat, it ought not

to be eaten by convalescents, or those whose digestion is impaired.

TURBITH, or **TURPETH**, an officinal drug, being the bark from the fleshy roots of the *Convolvulus Turpethum*, L. an exotic species of the Bind-weed, growing in Ceylon.

Turbith is imported in oblong pieces, which are of a brown, or ash-colour externally, and whitish within. The best is brittle; contains a large portion of resinous matter; and is at first of a sweetish taste; but, when chewed, it becomes pungent and nauseous.—This drug is occasionally employed as a purgative; but is by no means safe, or uniform, in its operation.—It pays, when imported by the East-India Company, 2l. per cent. according to its value, and farther, 1s. 1½d. per lb. being the duty for home consumption.

TURBITH-MINERAL, or **YELLOW-VITRIOLATED QUICK-SILVER**, a medicinal precipitate obtained by cautiously mixing eight parts of vitriolic acid with four of purified mercury; and distilling the whole to dryness, in a retort placed in a sand-furnace. The white calx, on being reduced to powder, and thrown into warm distilled water, assumes a yellow colour; and becomes tasteless after repeated ablutions.

Turbith-mineral is a powerful emetic, and has been given with frequent success, in doses of from 1½ to 6 or 8 grains, to robust persons, who were afflicted with leprous diseases, and glandular obstructions, that had resisted the power of other medicines. It has also been recommended, in doses amounting from six grains to a scruple every day, in cases of *hydrophobia*; and some instances have occurred, in which it not only pre-

vented madness in dogs that had been bitten, but also effected a cure, after the disease had actually taken place.—Lastly, the water, in which this mineral is washed, has been used externally for lotions, in the itch and other cutaneous affections; but such practice ought never to be adopted without proper advice; as it may be attended with danger.

TURBOT, or *Pleuronectes maximus*, L. is a large fish of a remarkable form, nearly square; the upper part of its body being ash-coloured, with numerous black spots of different sizes: the belly is white; the skin wrinkled, without scales; and furnished with small, short spines, irregularly disposed.

Turbots grow to a very considerable size, commonly weighing from 20 to 30 lbs.: they are chiefly taken off the north coasts of England, Scotland, and Ireland; though one of the best known stations for the Turbot-fishery, is that on the Dogger-bank.—These fish generally associate in deep water, and are mostly drawn up by hooks and lines. The bait, usually employed, consists of small pieces of fresh herring, the lesser lamprey, haddock, or similar portions of fresh bullock's liver.—The turbot-fishery commences early in Lent; and, if conducted with skill and regularity, it furnishes employment to a great number of persons, who, in a productive season, run into harbour twice a week, to deliver their cargoes.

As an article of food, the flesh of the turbot, though firm, is tender, abounding with rich gelatinous nutriment: it is farther improved, by suspending the fish in the open air for 24 or 48 hours in the winter, before it is cooked.

TURF,

TURF, a brown or blackish fossil, consisting of a rich earth combined with the fibrous roots of vegetables, mineral oils, &c.

Turf differs from *peat*, only in its harder consistence; the latter being obtained from peat-bogs, and the former is dug out of more solid ground, such as dry commons, on which cottagers exercise the *right of turbary*, by prescription: both species are chiefly used as fuel, in those counties where coal and wood are scarce. After the turf or peat are consumed, their ashes are employed either as a **MANURE**, or they may be advantageously strewed on land infected with **CHAFERS**. See vol. i. p. 485.—Farther, it appears from the experiment of M. SAGE, that turf may be charred, or reduced to a state of cinder, in the same manner as **CHARCOAL**; and thus serve as an excellent substitute for the latter; because it not only burns with a more intense heat, but is also of a longer duration.

TURKEY, or *Meleagris gallopavo*, L. a bird originally from North America; but which has long been domesticated in Britain: it has a caruncle both on the head and throat; the breast of the male being tufted. When irritated, the feathers of this part are remarkably erected; the prominence on the forehead is relaxed; and the bare spots of the face and neck become uncommonly red.

Turkies subsist on grain and insects: early in the spring, the female frequently wanders to a considerable distance from the farm-yard, for the purpose of constructing her nest; where she deposits from 14 to 17 white eggs, marked with reddish or yellow freckles; but seldom produces more than one

brood in a season. Great numbers of these birds are reared in the North of England; and, towards autumn, hundreds at a time are driven to the London market, by means of a scarlet shred of cloth, fastened to the end of a stick; which, from their antipathy to this colour, serves as a whip.

Turkies, being extremely delicate fowls, are much oppressed by cold: hence the Swedes plunge their chicks into cold water, soon after, or at least on the same day, when they are hatched; then force them to swallow one whole pepper-corn each; and restore them to the parent bird. Thus, they are enabled to resist the impressions of the severest winters, and their growth is not retarded.

Young turkies are liable to a peculiar disorder, which frequently and speedily proves fatal: on inspecting the rump-feathers, two or three of their quills will be found to contain blood; but, on drawing them out, the chick soon recovers; and afterwards requires no other care than common poultry.

Turkies are highly esteemed, on account of their delicate flavour; for their flesh is not so rank as that of either geese or ducks, and is likewise more nutritious.

TURMERIC, or *Curcuma*, L. a genus of exotic plants, comprehending two species, namely: 1. The *rotunda*, having a round fleshy root, similar to that of ginger; and 2. The *longa*, with long yellow roots, which spread to a considerable extent. Both are natives of India, whence their roots are annually imported by the East-India Company, paying 2l. per cent. according to their value; and a farther duty of 2½d. per lb. for home consumption.

Turmeric has a weak, though agreeable, smell; and a bitterish, pungent taste: it is internally of a deep saffron-colour, which it communicates to watery infusions.—This drug is, by the Indians, principally employed for seasoning rice, and other culinary preparations:—it is reputed to be aperient, and of considerable efficacy in the jaundice; but is chiefly consumed in dyeing the finest yellow colours, which are also the least permanent; and giving a brighter, though perishable, shade to scarlet cloth.—See also YELLOW.

TURNIP, TURNIP, or KNOBLES, *Brassica Rapa*, L. an indigenous biennial plant, growing in corn-fields, and chiefly in their borders; where it flowers in the month of April.

There are many varieties of the turnip, which are cultivated, both for feeding cattle, and for culinary purposes; but we shall enumerate only the principal, namely:

1. The *Oval, Common White-stock, or Norfolk Turnip*.

2. The *Large Green-topped Turnip* attains a considerable size, and is very sweet and soft; but, growing *above* the ground, it is liable to be injured by severe frosts.

3. The *Purple-stock* resembles the first variety, excepting that its size is somewhat smaller; the rind is of a dark-red or purple colour; and its pulp is also more close and firm, than that of the Common Norfolk turnip. It withstands the severity of winter, without receiving material injury, and is more succulent in the spring; but, not being relished by cattle so well as either of the two preceding varieties, it is not generally cultivated.

4. The *Ruta-baga, or Swedish turnip*, is one of the most valuable roots of the kind. Its inside is

either white or yellow; which colour, however, does not affect its quality: it is more hardy than either of the preceding varieties, and suffers no injury from the most intense cold.—As this turnip, when allowed to *seed* near the Oval, or Norfolk white, produces numerous varieties; it has been conjectured, that a new sort may, by a judicious intermixture, be obtained, which will probably acquire from the one, a sufficient degree of hardness, to resist the winter; and, from the other, an increase of size, as well as a quicker growth.

5. The *Hastings* is a new variety, imported, several years since, from Tibet, in Asia, by Governor HASTINGS.—This plant has not been hitherto cultivated to any extent; but it appears, as far as we can ascertain, to be one of the most wholesome and profitable roots of this species.

Turnips, in general, succeed better in light soils, consisting of a mixture of sand and loam, than in very rich or heavy lands:—the crops of the latter will be rank, and run to flower at too early a period of the spring; though their weight may not be perceptibly diminished.

These roots are raised from seed, which ought to be changed annually, or every second year, without exception; as it is apt to degenerate, and the quality of the roots will consequently be impaired. The season for sowing, varies according to the time of feeding: thus, if the turnips be intended for feeding cattle from December to February, the seed must be committed to the ground from the middle of May to the end of June; but, in case they be designed to supply food till May, it should not be

be sown before the latter end of July, or early in August.

The quantity of seed depends upon the method of culture; for, if it be *broad-cast*, 2 lbs. per acre will be necessary: but a more advantageous mode is that of *DRILLING*, in rows three feet asunder, which requires only one pound of seed. Although we have given an account, vol. ii. pp. 166-82, of the most valuable *Drill-machines*, yet as two implements of this description have lately been contrived, for the express purpose of drilling *turnips*, we have been induced, from their remarkable simplicity, and practical utility, to furnish our readers with a complete account and delineation of such improvements.

In the year 1801, the Society for the Encouragement of Arts, &c. granted a premium of 10 guineas and a silver medal, to the Rev. T. C. MUNNINGS, for his invention of a Turnip-drill, of which he communicated a model, accompanied with a narrative of experiments, to determine "the comparative advantage of the drill or broad-cast method, in the cultivation of turnips."—It consists of a tin box, resembling the shape of a barrel, which is fixed to the axis of a wheel about 22 inches in diameter, and vertical with such box; dropping the seed, during its revolutions, through certain small apertures, which are in the middle of the barrel, about 14 inches asunder.

Description of the Turnip-Drill, invented by the Rev. T. C. MUNNINGS.

[Plate 1. SUPPLEMENT.]

Fig. 1.—A, the wheel with an iron rim.

B, the tin barrel, or seed-box, which is fixed to the axis of such wheel.

C, the opening, through which the seed is introduced into the box; and which is afterwards closed by a cover.

D, a semi-circular plate of tin, the design of which is to exclude all impurities from the seed-box.

E, E, the two handles of the machine.

Fig. 3.—F, represents the seed-box on a larger scale.

G, the holes in the tin box, through which the seed falls upon the land.

H, part of the axis of the wheel, to which the seed-box is fixed.

Mr. MUNNINGS considers his drill for turnips, as much superior to any other, from the single circumstance of its depositing the seed so *instantly* after the plough, as entirely to preserve the good effects of the first evaporation: and he conceives, that such evaporation contributes to the uniform vegetation of minute seeds. Thus, in the six acres of his drilled plants, there was not a deficiency of six square yards; though, on three acres of broad-cast, before rain fell, not one half, perhaps not one-third, of the seeds vegetated. He is fully persuaded, that the drill-method, in the cultivation of turnips, will, in all seasons, be superior to the broad-cast; but, that the very great and striking difference between the two methods, will most effectually be perceived in a season of *uncommon drought*.

The second drill-machine is, that contrived by THOMAS ANDREW KNIGHT, Esq. of Elton, near Ludlow; on whom the Patriotic Society above mentioned, in 1801, conferred their silver medal.

R 4

Descrip-

Description of Mr. KNIGHT'S Drill-Machine for Sowing Turnip-Seed.

[Plate II. SUPPLEMENT.]

Fig. 2.—A, is an iron wheel; which, running on its edge, formed by two concave sides, makes the groove, into which the seeds fall.

B, a wheel, that moves on the same axis as that marked A, and turns the wheel C, which gives out the seed, by means of a strap.

D, the tube, through which the seed passes, and falls into the channel made by the iron wheel.

E, are the feet of the implement.

F, represents six lengths of a jack-chain, which Mr. KNIGHT finds to cover the seed remarkably well; and which he believes to be preferable to any kind of harrow; as it can never become obstructed by the loose straw generally occurring on the surface of land recently manured.

G, I, the seed-box.

H, H, the handles of the machine.

Fig. 3, is a section, on a larger scale, of the seed-box G, in **Fig. 2.**—The wheel marked C, is the same in both figures: it is fixed on the axis of the cylinder I, the surface of which is perforated with holes, as at K, for the distribution of the seed. Such cylinder revolves within a groove, at the bottom of the box; in which it is so firmly fixed, that no seed can pass through, without being delivered by the holes K.

L, is a small brush, rubbing against the cylinder, for clearing out any seeds that may remain in the holes.—The seeds fall into the tube beneath the cylinder, whence they are conveyed into the furrow

or channel, made by the indenting rim of the iron wheel; being then covered with soil by the loose chains above described.

Fig. 4.—A front view of the wheel, exhibiting its edge: the angle forming that edge must be made more or less acute, and the strength of the machine in proportion to that of the soil. Mr. KNIGHT has, sometimes, added weights of lead over the axis of the wheel; but he observes, that they will seldom be required; having tried the instrument on different soils, with equal success. Great advantage may be derived from sowing turnips with it, at the time when horses, now commonly employed for such purpose, are otherwise engaged. In this respect, a few days are frequently of importance; as the plants, in consequence of fortunate rains, obtain a remarkable superiority over those which have been sown a few days later.

The labour of using this machine is so easy, that a workman usually drills four statute acres, or somewhat more, in one day; the rows being at the distance of 16 or 20 inches, and the plants six inches apart in the row.—It is necessary either to harrow the ground across, or to roll it, previously to the instrument being used, that the labourer may see the rows he has made; but, Mr. KNIGHT remarks, that he always found the crop to succeed better, after the roller, than after the harrow, even in very strong lands.

When the turnips have five leaves, they must be hoed, and thinned so as to be six inches apart, whether sown by the drill or broad-cast method: in the course of another month, or sooner if the weather prove wet, the hoeing

M.^r Besant's Undershot Water-Wheel.

Fig. 1. a.

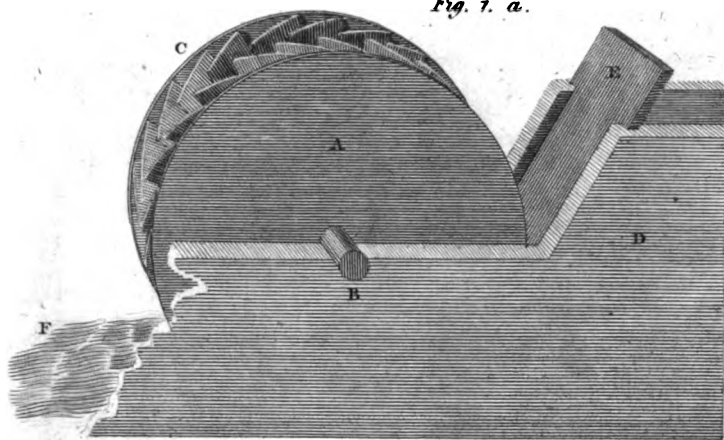
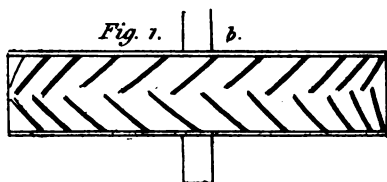


Fig. 1. b.



M.^r T. A. Knight's Drill Machine.

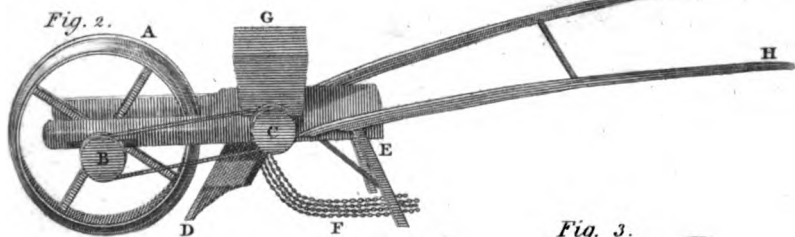


Fig. 3.

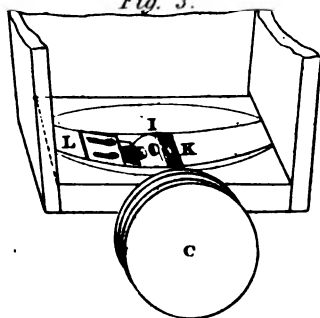


Fig. 4.



ing ought to be repeated, and the plants be left (according to some agriculturists), at least 14 inches asunder. These roots must likewise be kept clear of all weeds; for which purpose a horse-hoe is usually employed: but, as many farmers, in distant parts of the island, may not be provided with that implement, we have annexed the following figures of a plough, employed chiefly in the county of Roxburgh, for the express purpose of cleaning turnips. It con-

sists of two ploughs, which are of a size considerably less than those in common use: each of them without the small stilt or handle, but joined together with wooden and iron bars; so that both instruments may be fixed at any requisite distance, for taking the earth from turnips: on being brought closely together, they form a common double-mould-board-plough, that may be advantageously used for passing between the drills, and forming the ridges.

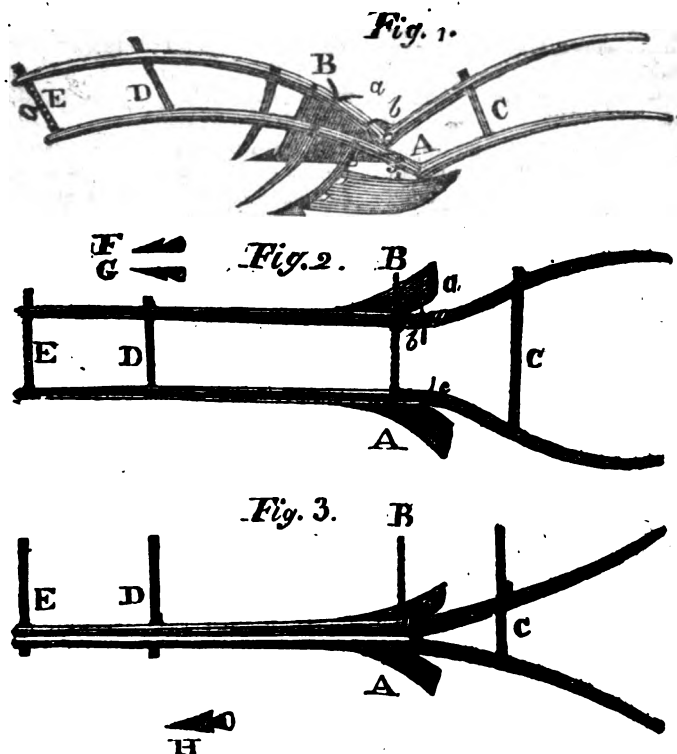


Fig. 1. is a view of the plough, when ready for removing the soil

from turnips (as it appears to a person standing on one side and towards

wards its front); each beam having its distinct coulter, and feathered sock.—A, B, is a strong iron rod, formed into a screw, for the greater part of its length: this screw, being affixed to the left hand beam at A, passes through the other beam, to which it is attached by means of two nuts with handles, marked *a* and *b*; and, when firmly screwed on each side of such beam, it fixes both at any distance required.

C, and D, are two wooden (or sometimes iron) bars, that are fixed in a similar manner to the left-hand beam, and passed through the other, where they are secured by wedges.

E, is a bar of iron, which is likewise inserted through both beams; being perforated with holes, for fixing the bridle, by which the plough is drawn. The mould-boards are fastened to the sheaths by hinges, and are placed at any requisite width, by means of two iron pins, *f* and *g*; which, descending through the beams, pass through holes made in a thin iron bar, fixed to the inside of each mould-board.—F, and G, are the two feathered socks.

Fig. 2, is a bird's-eye view of the same implement; in which the manner of altering the mould-board may be more clearly perceived.—When the plough is employed in this way, it is drawn by two horses.

Fig. 3, is another view of the plough, from above; when the two beams are brought into contact, forming one double-mould-board-plough. In such case, the coulters are removed; the two socks are taken off; and that marked H, is put upon the points

of both the sheaths, so as to clean the bottom of the furrow between the drills, while it serves to keep the two sheaths firmly together. The machine is now drawn by one horse.—The advantages derived from the use of this implement are great; as double the work of a common plough may thus be performed; and, as the machine does not, like the latter, lay the soil too much upon the drill.—Sometimes, the Roxburgh plough is made with two additional moveable mould-boards, which are suspended by hooks; when the two beams are separated, as in Fig. 1, and 2. In this case, it will set up two drills at once; though it ought then to be made proportionally stronger, and to be drawn by two horses.

In the 4th vol. of the *Letters and Papers of the Bath and West of England Society*, we find an account of a peculiar and very successful cultivation of turnips; by J. KIRKPATRICK, Esq. of the Isle of Wight. He states, that a Mr. CUBITT GRAY, of Southrepps, Norfolk, never harrows his land, till it is to be ploughed again; but leaves it as open as possible, in order to warm it; conceiving that land can never be too warm or dry for turnips; in consequence of which, he has uniformly, for the last 16 years, had the best crops; even though the sowing season was dry.—Notwithstanding every precaution, it frequently happens in turnip-fields, that large spots remain barren: we have, therefore, subjoined the following representation of a simple instrument invented by Mr. GRAY, for the purpose of filling up such vacant spaces from the adjoining parts of the same field; and which has also been employed

ployed for transplanting other vegetables



The handle A, must be held with the left hand; and the short handle B, drawn up with the right. The *transplanter* should next be put over the vegetable intended to be taken up, and forced into the ground with the foot: it is then to be twisted round, and carefully drawn up, so that the earth may adhere to the root. A hole should, in the mean time, be

made by an assistant, furnished with a similar instrument, for the reception of the turnip; the root be conveyed in the first transplanter; and deposited in the cavity: after which, the right hand being kept steady, the left must be gradually raised; when the earth and plant will be left in the hole undisturbed.

Turnips are subject to the depredations of numerous insects, and particularly to those of the following, namely:

1. The **BLACK CANKER**; which see.

2. The **BLACK FLY**; an insect which may be prevented from attacking turnips, by sowing them between beans; or, by adding one-fifth part of radish-seed to the former, and rolling it into the ground. The steeping of turnip-seed in water, for 24 hours previously to sowing, is likewise believed to secure the future roots against injury; but the most efficacious method appears to be that adopted by the late Earl of ORFORD (*Annals of Agriculture*, vol. xiv.): it simply consists in immersing the seed in *train-oil*, during the night before it is sown. The roots do not acquire any ill taste; and seven gallons of such oil are stated to be sufficient for steeping a quantity of seed that will cover 200 acres.—See also vol. ii. p. 315.

3. The **SLUG**, to which we refer.

4. The **Worm**, an insect feeding upon the root; in consequence of which, the plant gradually withers, and at length perishes.—No certain remedy has been hitherto devised for destroying this depredator; but it has been conjectured, that its ravages may be prevented, by

by manuring the soil with soap-boiler's ashes.

The turnip is one of the most valuable roots raised for culinary, or economical purposes.—Its young tops, when boiled, afford a good substitute for greens; and, though nutritive, they are somewhat flatulent; which property may, however, be corrected by the addition of pepper and vinegar. More wholesome, and easy of digestion, are the *Swedish Turnips*; but they should not be long kept in heaps; being thus apt to become rank; and, consequently, still more indigestible.—Mixed with wheaten flour, and properly baked, the *Ruta-baga* furnishes a nutritious kind of BREAD.—See vol. i. p. 329.

Farther, *Knolles* are very useful as a *fallow-crop*; and for fattening cattle of every kind. Thus, if sheep be fed with them in the manner directed p. 59, of this vol. they will thrive uncommonly, and their flesh will acquire a delicate flavour. With the mercenary view of obtaining the greatest profit, some sheep-breeders in Lincolnshire extract the fore-teeth of *culled ewes*, and turn them into the field, where they speedily fatten on the tops, without biting the roots. Turnips likewise afford an invigorating food to horses; and, when cut into small pieces, these animals will be induced to eat chaff, and other provender, with a good appetite. Such food not only preserves them in health, but also saves the expence of corn: their coats are thus rendered perfectly smooth; and, if the *Ruta-baga* be used, it is eminently calculated to cure the *grease*.—Cows devour both the tops and roots of turnips, with equal eagerness; and, as their milk is apt to acquire a pecu-

liar flavour from the former, the butter obtained from it may be rendered perfectly sweet, by mixing one quart of boiling water with eight of the new milk, immediately on its arrival in the dairy; after which it may be put into the usual vessels, to stand for cream.—See also vol. i. p. 406.

Lastly, the roots of turnips being of such extensive utility, different means of preserving them from frost, and decay, have been contrived; and of which the following appears to be the most successful. After drawing the turnips in February, and cutting off the tops and tap-roots (which may be given to sheep), Mr. VARLO directs them to be exposed on dry soil, for a few days: a layer of straw should next be spread on the ground; and, on this, a stratum of turnips, about two feet thick: other layers of straw and roots are then to be formed alternately, till the top be carried to a point; the edges of the straw being turned up, to prevent the turnips from rolling out. The whole should now be covered with straw, which will serve as a thatch; one load being sufficient for 40 tons of roots. Thus managed, the turnips will be effectually sheltered against the frost; and may, for several months, be kept in a sound state.

TURNIP-CABBAGE.—See vol. i. p. 413.

TURNIP-ROOTED CABBAGE. See vol. i. p. 414.

TURNING, is the art of forming wood, ivory, and other hard bodies into an oval or round shape, by means of a LATHE.

This art was carried to great perfection among the Romans; and is of such importance at present, that it materially contributes to the perfection

fection of many other branches in mechanics. The machine ought to be fixed in a light place, at a sufficient height to allow the turner to inspect his work, without endangering his eyes by the sudden separation of chips.

Previously to fixing the wood, bone, ivory, or metal, on the lathe, it ought to be rounded with a small hatchet, with a file, or with a plane; and the centres of the surfaces at each end should be ascertained: for this purpose, it will be advisable to lay the piece of wood upon a board; and, after opening a pair of compasses nearly to half the thickness of the piece, one of the legs must be attached to the board, and the point of the other brought into contact with one of the ends of the piece to be *turned*. Four equidistant arches must then be described at the circumference of such end, which should intersect each other within; and, if these be accurately made, the point of intersection will be the centre. The middle of the opposite extremity ought now to be determined in a similar manner; a small hole be made in both; the points of the puppets inserted; and the piece firmly fixed, so that it may be easily revolved.

Next, the cord ought to be passed twice round the piece, and adjusted to the strap connected with the wheel: when the *rest* is placed as closely to the work as possible, the turner moves the wheel, by means of the *foot-board*; then presses a *gouge*, or other chisel, against the wood, in an horizontal direction; and thus, by the steady, well-regulated application of his tools, gives it the requisite form. After having completely turned the work, it requires to be

polished either with the skin of the Shark, the Rough Horse-tail, or other substance adapted to the nature of the material, thus manufactured.

TURN SOL, or TURNESOL, a valuable dyeing drug, which is prepared chiefly in the village of *Grand-Galargues*, near Montpellier, from the *Croton tinctorium*, L. in French called *Maurelle*: this plant produces a round stalk with many leaves, and seldom exceeds nine inches in height.—It is therefore erroneous, when our voluminous contemporaries uniformly assert, on the authority of M. NISOLE, that *Turnsol* is obtained from the tops of the *Heliotropium tricolorum*, L. and, though it may be true, that such drug is occasionally manufactured from the latter vegetable, yet the genuine article is doubtless the result of the following process.

Toward the latter end of July, or early in August, the flowering tops of the *Maurelle*, or Litmus-Croton, are expeditiously collected, and bruised; when the dark-green sap is expressed into stone vessels, with the addition of urine. Linen or woollen rags are next dipped into this liquor, and immediately dried in the sun; after which they are suspended for seven or eight hours, over casks containing stale urine, quick-lime, and alum, till they acquire a blue or dark-violet colour; and, if necessary, again immersed in the juice, dried, and treated as before. Thus prepared, they are packed, and sold by the French under the name of *Tournesols en drapeau*. These blue shreds are chiefly employed for tinging wines, cheese, linen, and paper. When infused with distilled water, they afford an excellent test; for, on pouring

pouring a little of this solution into any liquor containing an acid, it will instantly turn *red*.—Turnsol pays, on importation, a duty of 5s. 2d. per cwt.

TURPENTINE, a transparent, resinous substance, which exudes naturally, but is chiefly obtained by incision, from various species of the pine-tree; and is divided into *four* kinds, namely:

1. The *Chian*, or *Cyprus* turpentine, is derived from the Pistachia-tree: it is of a thick consistence, resembling that of honey; has a fragrant smell; and a bit-terish, pungent taste.

2. The *Venice* turpentine, which exudes from the Larch-tree, has a strong smell, and a hot, disagreeable taste: it is less viscid than any of the other turpentines, and generally of a clear whitish or yellowish cast.—This, and the preceding species pay, on importation, a duty of 4½d. per lb.

3. The *Strasburgh* turpentine possesses an agreeable aromatic odour, but an uncommonly bitter taste; is neither so thick as the first species, nor so thin as the second; but clearer, and less tenacious than either; being commonly of a yellowish-brown colour:—it is imported from Germany, and charged with a duty of 14s. ½d. per cwt.

4. The *Common* turpentine is extracted from the spruce fir; it is of a dark-brown colour; of the consistence of honey; and has the most disagreeable odour and taste, of all the different species.—Considerable quantities of this drug are prepared from the resin, in Britain; but, as they are insufficient to supply the market, it is imported from America, and other countries; paying about 2s. 6d. per cwt.

All the turpentines yield, on distillation, an essential oil, which is extremely pungent. On account of their diuretic and tonic properties, they are often successfully prescribed in calculous complaints. The Venice turpentine is preferably recommended as a diuretic, and detergent; while those of Chios and Strasburgh are used as corroborants. The common sort is mostly employed as an ingredient in the plasters used by farriers; and its essential oil, obtained by distillation, is consumed partly in the preparation of GIN, and partly by house-painters; as likewise for the different varnishes in the floor-cloth, umbrella, and many other manufactures. Lastly, when combined with honey, this oil is supposed to afford a powerful remedy in rheumatic affections.

TURPETH. See **TURBITH**.

TURTLE, the **COMMON**, or **GIANT TURTLE**, *Testudo midas*, L. a native of the West Indies and South America. This amphibious animal attains to a prodigious size; being sometimes three yards long, and six feet broad; weighing from 5 to 800 lbs. The female digs numerous holes in the sand, where she annually deposits more than 1000 eggs, on which she broods during the night. The young, however, are chiefly hatched by the sun, and frequently become a prey to ravenous birds.

Turtles are taken, either by turning them on their backs, when on land; or, by hunting them in boats, and killing them by a kind of spear, similar to that employed for taking whales.—Their flesh is highly esteemed, particularly the belly, which is of a delicate white colour, resembling veal; and the green fat possesses a peculiar odour.

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The whole is very nutritious, and of a soft gelatinous nature; but, containing a large portion of strong fat (which is exceedingly unwholesome when rancid or tainted), it should never be eaten without salt, pepper, or other spice, and ought to be carefully avoided in every form, by convalescents, and those whose digestive powers are reduced.—As the turtle, however, subsists chiefly on vegetables, its flesh is uncommonly palatable and wholesome, especially in a salted state: thus, it forms a considerable article of trade in the West India Islands, where the natives convert the upper shell of this animal into canoes, troughs, bucklers, &c.

Mock-Turtle Soup, may be prepared in the following manner:—First, a calf's-head must be scalded, without stripping off the skin; when the gristly or horny parts should be taken out, and cut into small pieces. These ought next to be washed, wiped, and put into a vessel containing four quarts of strong broth, prepared of 7 lbs. of beef, a calf's-foot, a shank of ham, with an onion, carrot, turnip, some thyme, and other pot-herbs; to which may farther be added, a little parsley, sweet marjoram, and savory, cut small; together with some pounded cloves and mace, a little Cayenne pepper, a few young onions, some chopped mushrooms, and half a pint of Madeira wine.—All these ingredients are to be slowly stewed, till the liquor be reduced to two quarts; when a little broth, thickened with flour, should be gradually added, together with the yolks of two eggs, and carefully stirred, till the whole nearly boils: it is now suffered to stew for another hour, at the end of which, it is fit for use.—Such

is the method of making this expensive soup, which is so highly gratifying to the vitiated palates of those, who prefer the luxuries of the table, with their concomitant evils, to temperance, health, and longevity.

TUTSAN, or **PARK-LEAVES**, *Hypericum Androsaemum*, L. is an indigenous perennial, growing in woods and moist hedges, where it flowers from July to September.—This vegetable deserves to be more generally known; as it may be advantageously employed for the preservation of **CHEESE**, in the manner already stated, vol. i. p. 502. Farther, as the leaves of the Tut-san assume a red colour, and sometimes yield a red juice, we conceive, they might be converted to some useful purpose, either as a pigment, or dyeing material; by treating them, according to the processes described under the heads of **COLOURING MATTER**, vol. ii. p. 38, and **TURN SOL**.

TYPE, a term employed by printers, to denote the letters used in printing; and which includes not only large **CAPITALS**, **SMALL CAPITALS**, *Italics*, and **Lower Case**, &c., but likewise all the points, figures, and other marks that are adopted in **TYPOGRAPHY**.—See **PRINTING**.

Numerous improvements have, during the last century, been made with a view to expedite the business in this noble art. Among these, we cannot omit to notice, first, a contrivance by Mr. **WILLIAM GED**, in 1731; who formed a plate, of any character required, for every page or sheet of a book, from which plate he printed, instead of using single types for every letter, as is practised in the common method. Thus, the expence of

of printing was lessened, while the work was performed with more accuracy, beauty, and uniformity; but such practice was relinquished in the course of a few years, and has not been revived in Britain.

In the year 1784, a patent was granted to Mr. HENRY JOHNSON, for a new mode of printing, termed *Logography*, which consists in employing types expressive of *whole* words, instead of those corresponding to *single* letters. In consequence of this alteration, Mr. J. observes, that the compositor is less liable to error; the type of each word being taken up with as much facility as single letters; and, when a sheet is printed off, such types may be more easily *distributed*. Lastly, it is asserted, that the expence or number of types in *logography*, does not exceed that required by the common mode of printing: we doubt, however, the expediency of this contrivance; and believe, that much greater advantages might be derived from casting *syllables* instead of *whole words*; because the former occur more frequently, and may be so arranged as to follow in alphabetical order, in proportion to their more or less frequent recurrence.

In July, 1790, Mr. ROBERT BARCLAY obtained a patent for an invention, communicated to him (by Mr. FRANCIS BAILEY, of Philadelphia), respecting a method of making punches for stamping the matrices of printing types, &c. so that these cannot be counterfeited. Such invention is chiefly founded on the principle, that if any *brittle* substance be broken in two parts, it will exhibit certain irregular figures, that cannot be imitated. For a minute account of this very ingenious contrivance, the curious

reader will consult the 2d vol. of the *Repertory of Arts*, &c.

We cannot conclude this article, without mentioning the *stereotype*, lately introduced into France, by M. M. DIDOT and HERMAN; being doubtless one of the greatest improvements in the art of printing. Their process appears to be analogous to that of Mr. GED above related; the *form* being first composed, and carefully corrected; when the types are so firmly cemented, or soldered, as to resist the action of the press. Thus, correct and beautiful copies of works may be expeditiously taken off; an advantage, which is of the greatest importance in printing accurate editions of the Greek and Roman classics.

TYPHUS, a malignant contagious fever, attended with remarkable prostration of strength.—Great disputes have prevailed among physicians, respecting the real nature and proper denomination of this malady; but, as the names by which it has been distinguished, mostly depended on the different degrees of violence, observed in its progress, and a variety of other circumstances, we shall briefly describe this dangerous fever.

Beside the usual febrile symptoms, a typhus is characterised by uncommon dejection; languor; interruption of the animal functions; and weakness of pulse: the tongue appears moist and clean, or covered with a thin white coat; the urine is pale. After a few days, the patient feels anxiety; depression at the pit of the stomach; and becomes delirious; till at length he is seized with stupor, which frequently terminates in a profound sleep: the excretions by stool and urine pass off involuntarily;

ally; and about the 14th, 17th, or 21st day, the scene is often closed with convulsions; though sometimes protracted to a later period.

Causes.—Contagion, or infection, by contact with diseased persons; excessive evacuations of every kind; depression of mind; a studious life, attended with nocturnal watching; long subsistence on crude and impure food; putrid effluvia of poisons and hospitals, arising from corrupted substances, stagnated waters, &c.

The event depends entirely on the greater or less violence of the symptoms, and the relative tendency to putrescence: hence, the following are deemed favourable signs: a gentle moisture over the body; especially when succeeded by a moderate looseness; and the strength of the patient appears to be supported by the remedies applied. On the other hand, delirium; continual watchfulness; sickness; and convulsions; cold or clammy sweat, emitting a cadaverous odour; all these are inauspicious omens, especially when the patient lies on his back with his knees drawn up, and the body gliding downward. If the spots, that generally appear about the 11th or 14th day, be of a dark and livid hue, great danger may then be apprehended.

Cure.—Abstinence from all animal food, and an immediate removal from a contaminated atmosphere to a clean, dry, and airy situation. If the alimentary canal be oppressed by crudities, either an emetic, or moderate laxative, according to circumstances, should be timely administered. Mild sudorifics, in conjunction with tonics,

especially the Peruvian bark, and vegetable acids, conveyed in copious draughts of diluents, with the addition of wine, have generally been found beneficial. If the head be much affected, blisters, applied to the neck, sometimes afford relief. Should the patient, about the 7th, 11th, or 14th day, feel oppression, anxiety, and uneasiness, an eruption on the neck, chest, or back, may be suspected; in which case, gentle cordials will be proper. Colliquative sweats may be counteracted by the use of generous wine and bark. When the appetite returns, the patient should first subsist on thin, chicken and other broths; weak jellies of sago, hartshorn, &c. Thus, slight attacks of this fever may often be removed. But, when it rises to a degree of malignity (such as is often experienced in hot climates, on account of the noxious exhalations during the night), it will be advisable to attend first to the necessary evacuations; after which, the bark, æther, and camphor, should be freely administered with red or Rhenish wines, fixed air, and other antiseptic remedies: if the eyes appear wild, and the speech be quick, blisters, or fomentations of vinegar and warm water, ought to be immediately applied to the feet. Cold bathing, however, has often been attended with more salutary effects. According to the late theory and practice of Dr. REICH, the liberal use of the mineral acids, especially of the muriatic, or *spirit of salt*, has proved of the greatest service; but, neither this powerful medicine, nor bathing or affusion with cold sea-water, can with safety be ventured upon, without medical advice; for no dis-

ease demands more professional sagacity and judgment than the true typhus.

Consistently with our promise (vol. ii. p. 269), we shall only add, from our own recent experience, that the *internal* use of this acid, when *large* doses of it are required, is liable to many serious objections, which must ever prevent its general adoption. But we are nevertheless convinced that it may, in all cases, be safely applied in the form of liniments, fomentations, and baths: thus, a very large, and much larger proportion than

by swallowing it, may be daily, nay, hourly, introduced into the system, especially in the earlier stages of the disorder, before the patient's strength is too much exhausted. Farther, we are of opinion, that in *desperate* cases, where a valuable life is at stake, the muriatic acid, sufficiently diluted, may be introduced into the stomach, by means of the tube contrived for that purpose by Mr. SAVIGNY.—Such attempts, however, can be justified only by the most pressing circumstances, and should never be made without medical assistance.

U. V.

VALERIAN, or *Valeriana*, L. a genus of plants, comprehending 22 species; 4 being indigenous, and of which the following are the most remarkable:

1. The *locusta*, or LETTUCE VALERIAN. See CORN SALAD.

2. The *officinalis*, or GREAT WILD VALERIAN, is perennial; grows in hedges, woods, and marshes; where it flowers in the month of June. The leaves of this vegetable are eaten by cows, but are not relished by sheep: its roots are very grateful to cats, and particularly to rats; on which account they are frequently employed by rat-catchers, for enticing those vermin. And, though the roots of this plant have a strong, disagreeable smell, and a bitterish, sub-acrid taste, yet they are successfully given in hysterical cases, either in the form of an infusion, or in powder; and have also occasionally

proved beneficial in obstinate epilepsies. — BERGIUS recommends them as diuretic, sudorific, and vermifuge.—Dr. WITHERING remarks, that they are an excellent medicine in cases of habitual *costiveness*, having afforded relief, where stronger purgatives were ineffectual. The dose varies from 1 to 2 drams, in the form of an infusion; or from 1 scruple to a dram of the powder to adults.

VALETUDINARIANS. See CHRONICAL DISEASES; DEBILITY; HEALTH, &c.

VANILLA, or *Epidendron nectarium*, v. *Vanilla*, L. is an exotic parasitical plant, growing in Mexico, whence its long slender pods, containing numerous black grains, are imported into Spain, and thence into England.—These seeds are warm and aromatic; possessing an oily taste, and a fragrant odour, similar to that of the Peruvian balsam:

balsam: they are used chiefly for imparting an agreeable flavour to chocolate, in the proportion of one grain to an ounce: the drug itself is said to be resolvent and corroborant; to afford relief in flatulency; and to promote the digestion of the oily matter contained in the cacao. On the other hand, if it be too freely used, its narcotic effects, though exhilarating at first; like opium, are succeeded by uncommon debility, and relaxation of the nerves.—When the fresh pods are opened, they exhale such powerful fragrance, as to intoxicate the person thus employed.

VAPOUR, a term denoting those particles of bodies, that are rarefied by heat: being thus rendered specifically lighter than the atmosphere, they ascend to a considerable height, and are at length totally dissipated.

The aqueous vapours, exhaled from the earth by the solar rays, compose the clouds; from which those humidities are precipitated, in the form of RAIN. But, there are others arising from metals, extremely pernicious to animal life: such, for instance, are those disengaged by the smelting or refining of lead, which communicate a deleterious property to the grass in their vicinity; so that the cattle feeding on it frequently perish; and, if any stagnant water be impregnated with these fumes, it proves equally fatal to fish.

There are likewise mephitic vapours, discharged from the bowels of the earth; and which are peculiarly injurious both to man and cattle: of this nature, are the fumes exhaled from the Grotto del Cani, in Italy; and those generated in some wells, and subterraneous places, in Britain. As there are

instances in which these were attended with melancholy effects, various expedients have been devised, with a view to render them innocuous; but the cheapest and most simple, is that proposed by Mr. EBENEZER ROBINSON, in the *Transactions of the American Philosophical Society*. He directs a pair of smith's bellows to be fixed in a wooden frame, so as to work in the same manner as at the forge: this apparatus being placed at the edge of the well, one end of a leather tube must be fastened to the nozzle of the bellows; while the opposite extremity is thrown into the well; and, on blowing them for about half an hour, all pernicious vapours will be effectually expelled.—If, however, any person should unfortunately have been suffocated by these exhalations, Dr. VAN MARUM, as well as M. VAN TROOSTWYK, in such cases, advise the lungs to be inflated with dephlogisticated or vital air, through a bladder and tube contrived for this purpose. The treatment pointed out under the article SUFFOCATION, may also be usefully employed on such melancholy occasions.

In March, 1792, a patent was obtained by Mr. CHARLES WILLIAM WARD, for a method of converting the vapour or smoke arising from the combustion of different substances, into various materials (which are not stated): our limits not permitting us to describe the machines by which such object is effected, the curious reader will consult the specification inserted in the 1st vol. of the *Repository of Arts*, &c.

A patent was also granted, in May, 1794, to Mr. ROBERT STREET, for an invention designed to produce

duce an inflammable vapour-force, by which engines, pumps, and machinery, may be set in motion. His method consists in placing an iron cylinder with a *counter-sunk* touch-hole in the lower surface, over a stove. When the bottom is sufficiently heated, a little spirit of turpentine, or of tar (in the proportion of 10 drops to a cubic foot), is poured into a funnel; which falls on the hot part of the cylinder, and produces an inflammable vapour. The external, condensed air, is then admitted to the touch-hole, where such fumes become ignited; and, by their concentrated force, a piston is raised, that communicates with, and works the pump or machinery, at the opposite end.—A farther account of Mr. STREET'S contrivance, is also given in the volume above quoted, where it is illustrated by an engraving.—For an ingenious and economical method of heating rooms by the evaporation of water in the form of steam, we refer the reader to the article WARMTH.

VAPOUR-BATHS. See vol. i. pp. 192-93.

VARNISH, a clear liquid composition, which by age, and exposure to the air, becomes hard, without losing its transparency: it is employed by painters, carvers, gilders, and other artisans, for imparting lustre to their works, while it defends or preserves them from the effects of dust, moisture, and air.

Varnishes are of various colours, derived from the ingredients of which they consist: their bases are resins, dissolved in fixed oil, in volatile oil, or in alcohol; and, accordingly as either of these fluids are used, the varnishes are distinguished by the names of fat or oily, essential, and spirit-varnish.

Amber-varnish. See vol. i. p. 274.

The fine *black varnish*, obtained from China and Japan, is a resinous juice exuding from a tree called *tsi-chu*, and which is conjectured to be the Cashew-nut tree, or *Anacardium occidentale*; but, being frequently adulterated, it may easily be imitated, by dissolving 4 oz. of gum-lac, a small piece of camphor, and a sufficient quantity of lamp or ivory-black, in 24 oz. of spirit of wine, over a gentle heat, for 24 hours; the vessel being occasionally shaken. The whole must then be strained, the pure liquid poured into a bottle, and suffered to stand for one or two days, till a clear fluid appear on the surface, which is then fit for use.

Copal varnish, of a superior quality, may be procured in the following manner: Take a certain portion of finely-pulverized copal; let it be thoroughly washed in soft or rain-water, then perfectly dried, and put in a glazed earthen vessel well covered, over a moderate coal-fire. After all the gum has been slowly melted, the vessel is to be removed from the fire, and half the quantity of *prepared* linseed-oil must be added, by gradually dropping it into the former; both being in a state nearly boiling. In order to prepare the latter, take one pound of pure linseed-oil, and an equal quantity of filtrated water; pour them together into a new earthen or tinned vessel; place this mixture over a fire, and suspend the following *five* ingredients in a coarse linen bag, which, however, must not touch the bottom; namely: amber, green and white vitriol, litharge of gold, and red-lead; of each half an ounce. When the oil begins to foam, all
fecu-

feculent matter should be skimmed off the surface, and the liquor be suffered to boil very slowly; till the water be completely evaporated; an effect which may be readily ascertained, if the height of the oil in the vessel has been previously measured. After the two different ingredients have been incorporated in the manner above directed, and have become cool, they ought to be diluted with oil of turpentine. In the course of two or three days, all the coarse particles will subside; and the clear liquor should then be carefully decanted, or rather filtered, through fine linen. Thus, a white and transparent varnish may be obtained: it is of extensive use for all light grounds, and is remarkably improved by age. If it be required of a harder consistence, it will be advisable to employ equal quantities of white amber and gum-copal, instead of the latter substance alone.

Another excellent *white varnish* may be made, by infusing 8 oz. of pulverized sandarach, and 2 oz. of Venice turpentine; with 32 oz. of highly-rectified spirit of wine, in a glass vessel, the orifice of which must be covered with a bladder, and pierced with a pin that is suffered to remain there. The whole is exposed for 8 days to the rays of the sun, or in warm sand, near a fire, and frequently shaken. When all the ingredients are dissolved, it should be allowed to stand at rest, till the liquor become pellucid; after which it must be decanted into another vessel, and will then be fit for any purpose required.

A *yellow varnish* may be prepared by dissolving separately, 2 oz. of pure gum-lac, in 48 oz. of alcohol, and 1 oz. of dragon's-blood in

the same quantity of spirit: the solutions must then be mixed, and 3 grains of *yellow-wood* be added: the whole is then suffered to digest for 12 hours in a gentle heat; when the liquor should be filtered through blotting-paper, and preserved for use, in bottles closely stopped.—This preparation is chiefly employed for imparting a gold colour to brass, or iron; and, when applied to leather that has previously been ornamented with tin-foil, it communicates a similar colour.

All varnishes ought to be secured from the dust: when used, they must be laid on lightly, but quickly, with a clean brush: the substance, thus coated, should then be exposed, if in summer, to the heat of the sun, or in a warm room, being covered with a glass case, to exclude dust; and, when perfectly dry, they ought to be polished with a smooth piece of pumice-stone.—See also PALES; and, in the Appendix, article IRON.

VEAL, or the flesh of calves, is highly esteemed, on account of its tender fibres; but these animals ought to be fed chiefly with *milk*, or *hay-tea*, and to be at least six weeks old, before they are used as food. Nor should the calf be confined in a dark place, or bled frequently, during the short period of its existence, with the luxurious view of rendering the flesh whiter and more palatable.

Veal is nutritious and cooling, so that it may, in moderation, be preferably eaten by persons leading sedentary lives; by convalescents; or those who labour under scorbutic complaints, or hemorrhages. It ought, however, always to be roasted; for boiled veal is less nourishing and less digestible.

VEGETABLE KINGDOM, a
S 3 term

term including all plants and roots which grow above and under ground; being nourished by the air, water, &c.—See **FOOD OF PLANTS**.

The different classifications of plants by RAY, TOURNEFORT, LINNÆUS, and other eminent botanists, having already been mentioned, vol. i. pp. 316-17; we shall at present confine our attention to the constituent parts of vegetables, and conclude with a few directions for collecting and preserving simples, both for medicinal and economical purposes.

According to the most accurate chemical analysis, plants have been found to contain :

1. SUGAR ; to which we refer.
2. STARCH ; which see.
3. *Gluten* is a viscid matter, that remains after washing wheaten flour, in the preparation of starch, and which also subsides when paste is repeatedly washed with cold water, till that fluid become perfectly transparent. It is very tenacious ; and, if combined with the nitric, it may be converted into the oxalic acid, which is known under the name of *Essential Salt of Lemons*.
4. ALBUMEN ; 5. JELLY ; 6. GUM ;
7. CAMPHOR ; and, 8. RESIN ; to which we refer.
9. CAOUTCHOUC, or Elastic Resin, is obtained not only from the tree mentioned in that article, but exists in numerous plants, particularly the *mistletoe*, from which it may be extracted by infusion in water.
10. WAX ; 11. ACIDS ; 12. ALKALIES (see also BARILLA, KELP, POT-ASH, &c.) ; 13. OIL ; all of which have already been explained.
14. *Earths* :—for instance, *lime*, which abounds in almost every

plant ; *silex*, or pure flint, has been discovered in the different species of HORSETAIL and GRASS ; *magnesia*, which occurs chiefly in the marine plants, particularly the SEA-WRACK, and the exotic species of the Saltwort, or *Salsola soda* ; and lastly, *alumina*, or pure clay, which is found only in a few vegetables.

15. Several *metallic substances* have likewise been chemically separated ; though in very small portions. Thus M. SAGE has clearly proved that gold exists in many plants ; M. M. SCHEELÉ and PROUSE have obtained manganese from the ashes of the Vine, Green Oak, Fig-tree, Pine, &c. Iron also forms an ingredient in almost every plant, but particularly in the different species of the SALTWORT.

16. The *Woody Fibre* is the basis of all vegetables : it abounds mostly in trees, but occurs less frequently in herbs ; is insoluble either in water or alkohol, but is acted upon by alkalis ; and is also decomposed by the mineral acids : when burnt in a smothering heat, it yields a large proportion of Carbon, or CHARCOAL.

The mode of collecting vegetables, or simples, varies according to their peculiar nature, and the different parts to be preserved. Thus, annual roots should be dug up before they shoot forth either stalks or flowers ; biennials in the autumn of the year in which they were sown ; and perennials also in the autumn ; though some naturalists prefer the spring for the collection of the latter ; because at that season they abound with juice, or sap : but, as they are then apt to shrivel in drying, the autumn is doubtless the most proper time for such purpose.

Herba

Herbs ought to be gathered, when the leaves have attained their full growth, though previously to the appearance of the flower-buds. With respect to the removal of leaves, no certain rule can be given; but flowers should be plucked on a clear day, when they are moderately expanded: after having been carefully selected, both herbs and flowers must be cautiously dried in a gentle heat, so that their strength and properties may be more completely preserved: and, if they contain any subtle or volatile matter, it will be advisable to pulverize them as speedily as possible, and to keep such powder in close glass vessels.

All fruits, however, should be allowed to become perfectly ripe, before they are removed from their stems or branches, excepting sloes, and one or two other astringents, that lose their virtues, if suffered to remain on the trees till they attain to maturity. Nor should seeds be collected, until they begin to grow dry, and are about to drop or shed spontaneously; when they ought to be preserved in an open situation, without being separated from their husks; as these serve to protect them from injuries of the air and weather.

Under the article PRESERVATION, we have alluded to a new and excellent method of keeping vegetables of every description in a *sapid state, for many years*, excepting cucumbers and radishes—it simply consists in drying them on a plastered floor, or an oven, moderately heated by a fire made below the structure; so as to avoid singeing or burning the leaves, stalks, &c.; the whole process being conducted in the manner about to be described, and requiring no farther

care in regulating the degrees of heat, than is necessary in the baking of thin biscuits; provided the former be exposed on their surface to the open air, for dissipating the moisture, while the latter are confined in an oven.

In order to succeed completely in this useful pursuit, the herbs and roots, as well as every species of fruit to be preserved, ought first to be cleaned, either by wiping, washing, and otherwise cleansing it in a manner similar to that practised for culinary purposes. The water should be completely drained, by placing the different articles on sieves, or frames on which canvas is expanded, or perforated boards, or similar contrivances. After repeatedly turning the leaves, stalks, or fruits, so that each side may become dry, they must be spread over a floor or oven, constructed on the principle before mentioned, till all their moisture be thoroughly evaporated; for, if the least humidity remain within the substance of such vegetables, they will become mouldy and corrupted. The best criterion for ascertaining the due degree of exsiccation, is that of the stalk breaking readily, and the leaves being easily reduced to powder between the fingers. In this shrivelled state, however, they could neither be packed nor conveniently transported: hence, it will be proper to remove them previously to a cellar, or other damp place, till they have become so pliable by the absorption of moisture, as to be compressed without crumbling to pieces. This degree of humidity is, according to experience, not detrimental to the preservation of the plants, and in its effects very different from that retained in their interior parts. Next, the vegetables

bles thus prepared, ought to be packed either in strong paper formed in the manner adopted with tobacco-leaves, or in wooden boxes which have been completely dried; as otherwise they will acquire the flavour peculiar to the wood. If the directions here given be strictly followed, vegetables may not only be preserved for a long time, without losing any of their essential properties, but they may also be reduced to the 16th, 20th, nay, to the 24th part of their natural bulk. Mr. EISEN, the inventor of this process, observes in his paper quoted in a former article, that half an ounce of such concentrated herbs or roots will be a sufficient allowance for each person, if eaten together with animal food; and that a traveller may carry provisions for two months in his pockets, especially as mushrooms, lobsters, small fish, and other animal substances, may be preserved with equal success.—Lastly, when such provisions are to be dressed, it will be necessary either to infuse them for a short time in hot water, before they are exposed to the fire; or, to steep them, particularly leguminous fruits, in cold water, so that they may swell to nearly their natural size; after which they may be treated in every respect like other culinary objects.

VEGETATION, is the natural process by which plants receive their nourishment.

Naturalists have formed various conjectures, to account for the mysterious phenomena occurring in vegetable nature; and though unable to discover the primary source from which plants are enlivened, yet it is now agreed, and proved, that all vegetables originate from seeds, each of which compre-

heads *three* parts, namely: 1. The *cotyledons*, or two porous lateral bodies or lobes, that imbibe moisture: 2. The *radicle*, or *eye*, which appears between the lobes: and, 3. The *plumula*, a small round body attached to the radicle, though wholly concealed within the *cotyledons*.

If a seed be deposited in the earth, in a favourable situation, it imbibes moisture, and evolves carbonic acid gas; but, if any oxygen gas be present, it is gradually absorbed by the seed, and the farinaceous matter, contained in the *cotyledons*, acquires a saccharine taste. Numerous vessels then appear in the lobes which convey the nutriment to the radicle, that progressively increases in size, and at length assumes the form of a *root*; strikes downwards into the earth; and thence derives the nourishment necessary for the support of the future plant.—Now the *cotyledons* shoot above the ground, become leaves, and form what botanists have termed the *seminal leaves*. Thus, the *plumula* is gradually enlarged, and rises out of the earth, spreading itself into branches, &c.; after which the seminal leaves wither and decay, while the different processes of vegetation are carried on in the plant, without their assistance.

Such is the manner in which the growth of plants *naturally* takes place: it may, however, be *artificially* promoted, by applying certain chemical preparations; but, as we have already concisely treated on this subject, in the articles FOOD OF PLANTS, and MANURE, the reader will revert to those heads.—Many valuable hints respecting the phenomena of vegetation, are contained in Dr. INGENHOUSZ's "*Experiments*"

periments on Vegetables," &c. (8vo. 6s.), and also in Mr. GOUGH's "*Experiments and Observations on the Vegetation of Seeds,"* inserted in the 4th vol. of the "*Memoirs of the Literary and Philosophical Society of Manchester."*

VEINS, in the animal body, are membranous canals, destined for the purpose of re-conveying the blood from the arteries to the heart. They run chiefly by the sides of arteries, but more towards the surface; and are, like these, composed of three membranes, namely, the interior coat, resembling the arterial; the second, or cellular; and the third, consisting of longitudinal fibres; the whole being, however, of a more delicate texture, so that they are apt to rupture, in consequence of too great expansion. Farther, the veins are provided with numerous thin, semi-lunar valves, which prevent the return of the blood; a circumstance that would otherwise frequently occur, from a want of muscular power in the venous system: hence, no pulsation can take place in these vessels. The blood which they receive from the arteries, flows but slowly to the heart; and is conveyed thither by the contractility of their membranes; the propulsion of the succeeding columns of that fluid from the arteries; the contraction of the muscles; and by the act of respiration.

In cases of venesection by the lancet, the blood being generally taken from the veins, we deem it a duty, to caution our readers against resorting to unskilful hands, where such an operation becomes necessary; as, from the contiguity of the arteries, as well as the nerves and tendons, serious injuries may be sustained, and which, in many

cases, have proved fatal.—If, during blood-letting, the patient become faint, it will be advisable to admit fresh air into the room; to give mild cordials; and to lay the person in a horizontal posture: by these means, the circulation will again be restored; and all farther inconvenience be obviated.

For an account of the varicose aneurism, an affection of the veins, we refer the reader to the article ANEURISM.

VELVET-LEAF. See **TREE-MALLOW.**

VENEERING, is a species of inlaying or marquetry, in which several thin leaves, or slips of fine wood, are applied to a ground-work of common wood: it is performed in the following manner:

The wood, intended for veneering, is first fixed in a vice, or sawing-press, where it is divided into leaves, not exceeding one line in thickness. Such leaves are then cut into small slips, of various forms, according to the design proposed; and, when the ground-work is duly prepared, they are cemented by means of glue, and submitted to the action of a press, till the whole becomes perfectly dry; after which the articles are scraped and polished.

VENTILATION. See vol. i. pp. 22 and 23; also the article **GRANARY.**

VENUS-COMB. See **NEEDLE**, the Common Shepherd's.

VERDIGREASE, or **ACETITE OF COPPER**, is a kind of rust usually prepared from that metal, by corroding it with vinegar.

The best verdigrease is mostly manufactured at *Montpelier*, in France, by forming alternate strata of copper-plates, and the husks of grapes, during their vinous fermentation;

tation; when they speedily become acid, and corrode the copper: after the plates have stood in such situation for a sufficient time, they are moistened with water, and exposed to the air; the verdigrease being successively scraped off, as it collects on the surface. In this state, the acetite is called *fresh* or *moist* verdigrease, having the form of paste; which, after triturating it in proper troughs, is put in bags, and dried in the sun.—It pays, on importation, a duty of 3½d. per lb.

Crystals of Verdigrease are prepared by saturating vinegar with the common acetite of copper, and leaving the solution to clarify; after which it is poured into a kettle, where it is evaporated till a pellicle appear on the surface: when cool, the vessel is furnished with small sticks, on which the crystals gradually settle:—they are subject in the Custom-house to the charge of 1s. 1½d. per lb.

Verdigrease is chiefly consumed for striking a black colour, when combined with a decoction of logwood; but, as it is apt to corrode the texture of the cloth, the Society for the Encouragement of Arts, &c. in 1782, conferred their silver medal and ten guineas on Mr. CLEGG, for his discovery of a substitute for verdigrease, in dyeing *black*. He directs equal parts, by weight, of vitriol of copper and of pot-ash, or other strong alkaline salt, to be separately dissolved: the solutions are then to be gradually mixed; and, if the vitriol be saturated, the water on the surface will become transparent, on adding a few drops of the alkaline solution: in the contrary case, a blue colour will be produced; so that more ashes should be added, till a complete saturation be effected. Mr.

C. observes, that these proportions of vitriol and alkaline salt, will be equivalent to a similar quantity of verdigrease; and, on being combined with decoctions of logwood, they impart a fine black dye, which is not injurious to the texture of cloth, hats, or any other article that may be tinged of such colour.

Verdigrease is, in surgical cases, sometimes applied externally; it operates as a mild detergent in cleansing foul ulcers, or other open wounds.—On account of its virulent properties, however, it ought not to be used as a medicine, without professional advice; and, in case any portion of this poisonous substance be accidentally swallowed, we refer to the remedies already pointed out, vol. i. pp. 74-75.

VERDITER, a preparation of copper, which is occasionally used by painters as a *blue*, but more generally, in combination with a yellow pigment, for a green colour. It is obtained in the following manner:—Let pure copper be dissolved in aqua-fortis; pulverized quick-lime be added to the solution; and the whole be well stirred. When the precipitate has subsided, it must be repeatedly washed in pure water; levigated while moist; and from 5 to 10 parts of quick-lime be incorporated with 100 parts of such precipitate: after which it is fit for use.—See also vol. ii. p. 37.

VERJUICE, an acid liquor prepared from grapes or apples, that are unfit to be converted into wine or cyder. It is also made from crabs; which, after being laid in a heap to sweat, are next stamped or ground in a mill: the pulp is put into bags, and submitted to the action of a press, in order to obtain all the juice; which is then poured into

into barrels, where it undergoes a fermentation for 10 or 12 days; after which it is fit for the purpose.

Verjuice is principally used in sauces, ragouts, &c. though it sometimes forms an ingredient in medicinal compositions, especially in farriery; and is also employed by wax-chandlers, for purifying that substance. — When intended for sale, it is subject to the same duties as CYDER and PERRY.

VERMILLION. See vol. i. p. 527; and vol. ii. p. 36.

VERNAL-GRASS. See SPRING-GRASS.

VERVAIN, the COMMON, or SIMPLERS JOY, *Verbena officinalis*, L. an indigenous plant, grown in waste places, on stone walls, and the sides of roads; flowering in the months of August and September. — This plant is eaten by sheep, and its flowers are visited by bees. The roots impart a very agreeable taste to pickled cucumbers. — Among the ancients, the Simplers Joy was dedicated to Isis, the goddess of birth; and, though at present exploded in medicine, HOFFMAN asserts, that the most inveterate and violent head-ach may be cured, by filling a bag with the leaves of Vervain, in a dry state, and applying it around the throat of the patient.

VETCH, or TARE, *Vicia*, L. a genus of plants comprehending 30 species, of which 8 or 9 are indigenous; and the following are the most remarkable, namely:

I. The *sylatica*, or WOOD VETCH, grows in woods and hedges, especially in mountainous situations; where it flowers in July and August, attaining the height of from two to four feet.

II. The *Cracca*, or TUFTED

VETCH, is frequent in shady places, meadows, and fields; flowers in the months of July and August. — Both, this and the preceding species, are said to restore weak or starved cattle to their former strength, more speedily than any other vegetable hitherto discovered.

III. The *sepiam*. — See BUSH VETCH.

IV. The *sativa*, COMMON VETCH, FETCH, or TARE, thrives in dry meadows, pastures, and corn-fields, where it flowers from April to June. This species is one of the most valuable of the Vetch kind, and is divided into three varieties, namely:

1. The *Summer Vetch*, is raised from seed, which is usually sown toward the end of March, or early in April, in the proportion of 8 or 10 pecks per acre, broad-cast; though, when drilled, half that quantity is sufficient, and the crop will be greatly superior. This variety is chiefly propagated and used for weaning lambs and sheep, as well as for *soiling* horses and cows: its seeds afford an excellent food for pigeons. — Bees obtain a copious supply of honey from the young leaves of this plant, which are marked with black, and the spots of which contain a delicious saccharine juice.

2. The *Winter Vetch*, is sown in the month of September, in the same proportions as the preceding sort; a small quantity of beans, or (which is preferable) of black oats, being intermixed, to support the plants; which are generally covered with long dung, to preserve them from the frost. — This variety is subservient to the same purposes as the *Summer Vetch*: when ploughed into chalk-lands in the month of May, it serves as an excellent manure

nure for wheat intended to be sown in the succeeding autumn. In the county of Gloucester, the Winter Vetch is cultivated as pasturage for horses, and is eaten off so early, as to admit of turnips being raised in the same year.

3. The *Pebble Vetch*, is sown in the spring, but is seldom cultivated; because it is less hardy than either of the preceding varieties, and does not produce an equal quantity of fodder.

V. The *lathyroides*: STRANGLE VETCH, or TARE, abounds in dry pastures, gravel-pits and corn-fields, in chalky and sandy soils; where its small bluish-purple flowers appear in the month of May. Its culture should be encouraged in sloping grounds, and sandy hills exposed to the sun; as it affords the most tender and agreeable food to sheep.

Beside the different kinds above enumerated, there is another, called the *Chinese Vetch*, which was a few years since introduced into England: its culture is at present confined chiefly to the county of Glamorgan, where it grows in tufts, from 18 to 24 inches in height. This species promises to be very profitable to agriculturists; as it is said to yield four crops in the year, and to afford food excellent for cattle, both in a fresh state, and when made into hay.

VETCH, the BITTER, or WOOD PEASLING, *Orobus sylvaticus*, L. an indigenous perennial, growing in woods, hedges, and pastures, especially in mountainous situations; where it flowers from May to July. This hardy plant is chiefly cultivated in gardens, for the beauty of its numerous blossoms; either by sowing it in autumn, or by dividing the roots: the latter being

very nutritious, are in Scotland applied to the same uses as those of the Heath PEA.—The leaves of the Bitter Vetch are much more relished by cattle, and especially by game.

VETCH, the CHICKLING, or VETCHLING, *Lathyrus*, L. a genus of plants consisting of 13 species, 7 being indigenous; and the principal of these are:

1. The *Aphaca*, or YELLOW VETCHLING, grows in sandy corn-fields, and meadows, where its greenish-yellow flowers appear from June to August.—Dr. WITHERING remarks, that the leguminous fruit of this, as well as the other species of Vetchling, are very nutritious, and may be eaten either in broth, or be converted into bread; though a larger proportion of wheaten or rye-flower be required for such purpose.

2. The *sylvestris*. See PEA, the Narrow-leaved Everlasting.

3. The *pratensis*, EVERLASTING TARE, COMMON YELLOW, or MEADOW VETCHLING, which abounds in pasture-lands, in woods, thickets, and hedges: it grows to the height of 6 feet; flowers in July and August. This species is reputed to be an useful vegetable in the feeding of cattle; though Mr. SWAYNE remarks, that they seldom eat it, if there be a variety of other grasses in the same field; and, as it produces few seeds, which are mostly devoured by insects, it does not appear to merit attention. Nevertheless, RECHSTEIN observes, that the Yellow Vetchling, both in a fresh and dry state, affords excellent food for cattle in general, and therefore deserves to be cultivated in meadows.

4. The *latifolius*; BROAD-LEAVED VETCHLING, or EVERLASTING PEA, is

is frequent in woods and hedges; flowering in the months of July and August. It is often raised in gardens, chiefly for the beauty of its variegated flowers; but Dr. ANDERSON believes it may be useful to the farmer; and, as it attains the height of 10 or 12 feet, having very strong stalks, he supposes that it would afford a large crop of hay.

There is an exotic species of the Chickling, namely, the *tuberosus*, which the Germans term Earth-nut, or Sow-bread; growing in stony and mountainous fields:—this plant is a valuable addition to meadows; not only on account of its odoriferous flowers, which blow from May to July, and are eagerly frequented by bees; but also for its black tuberous roots, which are in Holland eaten as fruit, and boiled for culinary use; having the sweet and agreeable taste of nuts. These roots contain a larger proportion of mealy particles than potatoes: and BERGIUS extracted from one pound of Earth-nuts, three ounces of a beautiful white starch; whereas the same quantity of the former yielded only one ounce. Why, therefore, should it not be used for bread?

VETCH, the CORN, WILD, or HAIRY TARE, TINE-TARE, or ROUGH-PODDER TARE, *Ervum hirsutum*, L. an indigenous plant, growing in sandy corn-fields, hedges, and meadows, where it flowers in the month of June.—This vegetable is eaten by horses, cows, goats, and sheep; but it ought to be carefully eradicated; as, during wet seasons, whole crops of corn have been overpowered, and their growth completely stifled, by this pernicious weed.

. VICHY-WATER, is obtained

from the tepid mineral springs, that rise in the vicinity of Vichy, in France. On account of its chalybeate and alkaline ingredients, it is taken internally; being reputed to be of great service in bilious colics, diarrhœas, and in disorders of the stomach, especially such as arise from a relaxed or debilitated state of that organ.

These waters are likewise very useful, when employed as a tepid bath, particularly in rheumatism, sciatica, gout, &c.: by combining the internal use with the external application, they have often effected a cure, where other remedies had failed to afford any relief.

VINE, the COMMON, or *Vitis vinifera*, L. a native of Japan, and the warmer regions of Asia: it has for centuries been raised in Britain; though its culture is most successful in the temperate climates, or between the 30th and 50th degree of northern latitude.

There are numerous varieties of this valuable shrub, which are cultivated for the delicious grapes they afford. Without entering into an account of their respective periods of maturation, we shall simply state the names of the most remarkable sorts; point out such as are peculiarly serviceable; and conclude with an account of their culture.

1. The July grape, or *Morillon Noir Haïf*.—2. The Royal Muscadine.—3. The Malmsey Muscadine.—4. The Black Museadine.—5. The White Muscat of Alexandria.—6. The Red Muscat of Alexandria.—7. The White Muscat of Lunel.—8. The Black Muscadel.—9. The Red Muscadel.—10. The Black Damascus.—11. The Black Tripoli.—12. The Black Spanish, or Alicant.—13. The Black Lisbon.—14. The Black Frontinac, or *Musc*

cat

cat Noir.—15. The Red Frontiniac, or *Muscat Rouge*.—16. The White Frontiniac, or *Muscat Blanc*.—17. The Grizzly Frontiniac.—18. The Red Hamburgh.—19. The White Hamburgh.—20. The White Morillon.—21. The Early White Grape of Teneriffe.—22. The Ciotat, or White Parsley-leaved Grape.—23. The White Corinth.—24. The Aleppo Grape.—25. The Red Grape of Syracuse.—26. the *Cœur*, or Morocco Grape.—27. The Black Raisin.—28. The White Raisin.—29. The Malvoise, or Blue Tokay.—30. The Genuine, or White Tokay.—31. The Lombardy.—32. The Smyrna.—33. The Brick.—34. The Claret.—35. The Syrian Grape.—36. The Auverna, or Genuine Burgundy.—37. The Cat's Grape.—38. The Greek Grape.—39. the Black Corinth.—40. The *Cornichon*.—41. The Red Chaselas.—42. The Black Prince.—43. The Black Burgundy.—And, 44. The White Early *Leipzig*.—See also vol. iii. p. 311.

To these may be added, the White, or Common Muscadine, having fine, round amber-coloured berries, and a rich vinous flavour.—The White Sweet-water, which bears large, white fruit, and abounds with an agreeable juice.—The Small Black Cluster, produces oval berries, which have a pleasant saccharine taste.—The Large Black Cluster presents more bulky grapes than the preceding variety; but which, on account of their rough, harsh taste, are not edible in a fresh state, and therefore chiefly converted into *Port-wine*.—The Miller Grape, or New Muscat of Jerusalem, yields large, round, red fruit; which, in prosperous seasons, attains nearly the size of gooseber-

ries.—The Black Hamburgh produces fine clusters of oval, black berries, that possess a sweet, vinous flavour.—All these varieties are recommended by horticulturists, as being eminently adapted to *small* gardens.—It is a remarkable historical fact, that, a few centuries since, the extensive *Vale of Gloucester* was industriously planted with this delightful shrub; from the grapes of which, England was then chiefly supplied with excellent native wines.

The vine is generally propagated from seed, cuttings, or layers; though it is sometimes raised by ENGRAFTING, or INOCULATION. In the first case, the seed should be set toward the end of February, or early in March, in pots containing light rich mould; and be plunged in hot-beds of a moderate heat. During warm weather, they ought to be gently watered in the afternoon, when the frames should be carefully closed. About the end of August, the young plants are to be gradually exposed to the air, so that they may become hardened before the approach of winter; but, in the latter season, they must be sheltered by frames, covered with mats. After having attained the height of about six inches, it will be proper to remove them into larger pots, filled with similar soil; to immerse them again in the hot-bed; and to tie them to slender sticks, or rods, in order to prevent them from trailing. Towards the end of the succeeding March, or in the beginning of April, they may be planted against the wall, at which they are intended to remain. In this situation, Mr. FORSYTH directs them to be cut at the *third eye*, if they be vigorous; but, in

in the contrary case, at the *second*: the lower bud, however, must be rubbed off, as soon as it appears.

If vines are designed to be raised from *cuttings*, these ought to be selected from strong and full grown shoots, which should be cut perfectly smooth, immediately beneath the part where they were produced, and have one or two joints of the last year's wood. The cuttings must be planted against walls, at the distance of one foot from each other, and at such depth, that the second eye may be level with the ground; but the lower eye ought to be rubbed off, on its first appearance; because, if that operation be delayed, the upper eye will be injured in removing the former. *Runners* and lateral shoots should likewise be cut off, excepting two which are to be trained against the wall.

Vines may also be propagated by *layers*. For this purpose, let the most vigorous shoots be laid in pots filled with fresh mould, and placed about two inches beneath the surface of the ground; the incision being made in the old wood below a joint, so as to leave one or two eyes on each. When the shoots or layers have taken root, they must be separated from the parent stock; manured with rotten dung or leaves; and watered twice a week during dry summers: all lateral excrescences should also be picked off, and the layers treated in the same manner as the cuttings. During the first year, vines will not advance rapidly; but, in the second, the strongest may be easily distinguished, and these may be suffered to stand, while the weaker ones must be transplanted to other situations.

The quality and size of grapes

depend greatly on the strength of the plant on which they grow.—Mr. FORSYTH, therefore, recommends the vines to be cut down to two or three eyes, in the first year, if there be a superfluity of naked wood. In the following year, a considerable increase of fine wood will be obtained, when all runners, &c. must be picked off; and the main shoots be nailed to the wall, progressively as they increase in length. During fine weather, it will be advisable to examine them every second or third week, and speedily to remove every lateral shoot. No farther attention will be required, excepting that all weeds must be carefully eradicated; for otherwise the growth of the vines would be impeded.—In the month of February, in the second year, the pruning should be repeated; and three buds be left to each of the strongest main shoots; but in those of a weaker growth, two eyes only must be permitted to remain. Mr. F. observes, that his *composition* (see vol. i. p. 88; and also p. 238 of the present vol.) ought to be applied as early as possible, after each pruning; for the vine, being very porous, speedily imbibes moisture, and thus quickly decays: should it accidentally have been cut at a late season, it will be necessary to sprinkle the powder of the preparation before quoted over the wound, till the bleeding or flow of the sap be completely checked.

Numerous insects prey upon the vine; which, unless timely destroyed, will totally kill the plant: as we have already stated the best methods of exterminating them, in the articles HOT-HOUSE, INSECTS, RED SPIDER, PINE-APPLE, &c., we shall here only remark, that their depredations

dations may, in a great measure, be prevented by watering the vines, three times in the week; a simple expedient by which the luxuriance of this shrub, as well as the *swelling* of its fruit, will be greatly promoted.

When the clusters are very large, and the grapes begin to ripen, it will be useful to cover them with nets; or with *buntine*, a stuff that serves for the flags of ships; and which will not exclude the sun and air from the fruit, while the latter is protected from the ravages of birds. The leaves, however, should only be plucked off in small portions, as often as the grapes are gathered; by which method these will continue in succession for a much longer period than could be effected, by hastily removing all the foliage from their branches. Those readers, who are desirous to obtain farther information, relative to the raising of grapes, will consult Mr. SPEECHLEY's "*Treatise on the Culture of the Vine*," 4to.; and Mr. FORSYTH's "*Treatise on the Culture and Management of Fruit-trees*," &c. in which the subject is amply discussed.

Vines are chiefly valued on account of their delicious GRAPES; but they may be made subservient to many other useful purposes: thus, the young twigs, when dried, cut into small pieces, and moistened with water, afford a wholesome food for cattle, and particularly for horses.—Dr. DARWIN conjectures, that the leaves of the variety, which produces purple grapes, would impart a colour, and astringency of taste, to British wines, similar to those derived from the skin of the same grape, in foreign vinous liquors.—The wood of vines reduced to charcoal, affords (according to

JACOBI, a reputable German writer) an excellent blue colour for painting and drawing. He employed equal quantities of fixed vegetable alkali, and vine-coal: after melting the former in a crucible, he gradually introduced the latter; both were allowed to act on each other, till the ebullition ceased; when the compound was poured out, dissolved in rain-water, and precipitated with spirit of vitriol; in consequence of which the ley, and especially the sediment, assumed a deep blue cast. After edulcorating this powder, by repeated washings in fresh water, and then calcining it, he obtained a very bright and pleasing blue pigment, which acquired a dark blackish hue, on dissolving it in oil of vitriol; though its lustre and shade were instantly re-produced, on diluting the solution with pure water.—Lastly, we learn from BINDER, another German author, that the purified stones or seeds of grapes, when moderately roasted, and ground in a coffee-mill, serve as a good substitute for chocolate; which, on the proper addition of sugar, cinnamon, and a little VANILLA, is very grateful to the palate, and cannot be readily distinguished from the genuine sort prepared of cacao.

VINE, the Wild. See BRYONY, the White.

VINE-FRETTER. See PLANT-LOUSE.

VINEGAR, an agreeable, pungent acid, which is obtained from wine, cyder, beer, or other fermented liquors.

Wine-vinegar:—Let any quantity of vinous liquor be mixed with its own lees or feces, or with the acid and austere stalks of the vegetable from which wine was prepared. The whole must be frequently

quently stirred, and either exposed to the sun, or deposited in a warm place: after standing a few days, it will ferment, become sour; and, in a fortnight, it will be converted into vinegar.—Such is the usual manner of producing this acid; which is frequently rectified by distillation, when it is known under the name of distilled vinegar.

Cyder-vinegar, may be made by fermenting new cyder with the *must* of apples, in a warm room, or in the open air, where it should be exposed to the sun; and, in the course of a week or nine days, it will be fit for use.

Another method of preparing vinegar, is that published by M. HEBER: it consists in exposing a mixture of 72 parts of water, and 4 of rectified malt-spirit, in a temperature of from 70 to 80° of FAHRENHEIT, for about two months; at the expiration of which the acetous process will be completed.—A cheaper, though more tedious mode, is that of dissolving 2 lbs. of molasses in 9 quarts of boiling water: this solution must be poured into a vessel containing a large quantity of cowslips; and, when the mixture becomes cool, a gill of yeast should be added. The whole is then to be exposed to the rays of the sun: at the end of 3 months, it may be bottled for use, and will be of peculiar service in pickling.

Tarragon-vinegar is manufactured, by infusing one pound of the leaves of that vegetable (which have been gathered a short time before it flowers) in one gallon of the best vinegar, for the space of 14 days; when it should be strained through a flannel bag; and a dram of isinglass, dissolved in cyder, must then be added; the whole be carefully mixed, and de-

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canted into bottles for a month. Thus, the liquor will acquire a most exquisite flavour; it will become remarkably fine, and almost colourless.

The utility of vinegar, as a condiment for preserving and seasoning both animal and vegetable food, renders it unnecessary to state the various articles in which it may be used with advantage: we shall, therefore, only add, that it affords an agreeable beverage, when combined with water, in the proportion of a table-spoonful of the former, to half a pint of the latter. Further, it is a medicine of considerable efficacy in hydrophobia, as well as in inflammatory, and putrid diseases, whether taken internally, or applied externally to the nostrils, or by way of fomentations. Relief has, likewise, been frequently obtained in hypochondriacal, and hysterical affections, in vomiting, fainting, and hiccough, by the application of vinegar to the mouth. If this fluid be poured into vessels, and placed over the gentle heat of a lamp, in the apartments of the sick, it greatly contributes to disperse foul or mephitic vapours, and consequently to purify the air.—Lastly, there is a method of procuring a very powerful *essence of vinegar*; which, however, can be practised only during the intense frosts of winter: it simply consists in exposing this liquor in basons, or other shallow vessels, when the watery parts are converted into ice; but the spirituous, or acetous basis, remains in a fluid state; so that, by repeated exposure, one pint of strong vinegar will, in very cold seasons, be reduced to about a table-spoonful of the essence. This preparation possesses a fine flavour, and a pungent, almost corrosive, taste:

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taste : hence it forms an excellent spice or sauce to fish in general, but particularly to lobsters and oysters.

VIOLET, or *Viola*, L. a genus of plants, consisting of 44 species ; of which the following are the principal :

1. The *canina*. See Dog's VIOLET.

2. The *tricolor*. See HEART'S-EASE.

3. The *odorata*, or SWEET VIOLET, is perennial ; grows in warm lanes, hedges, and ditch-banks, especially in clayey or marly soils ; flowers in the months of April and May.—Both the blossoms and seeds of this plant are mildly laxative ; and, when taken in doses of from 40 to 80 grains, the powdered root operates as a purgative, and likewise as an emetic.—Large quantities of violets are cultivated at Stratford-upon-Avon, for their petals, to impart the colour to *syrup of violets* ; an official preparation of which is kept in the shops, and proves an agreeable and useful laxative for children. Such syrup may also be employed in many chemical inquiries, for discovering the presence of an *acid*, or an *alkali* ; the former changing the blue colour to a red, and the latter to a green ; though slips of white paper, stained with this juice, and preserved from the access of air and light, may serve as a substitute for that purpose.

VIPER, the COMMON BRITISH, or *Coluber Berus*, L. a reptile which inhabits the dry, chalky, or stony counties, and particularly the Hebrides. It seldom exceeds 18 inches, or 2 feet, in length ; and is, in general, of a dusky yellow cast ; though a variety of a black colour is also occasionally met with. The

head is inflated, and furnished with a long hollow fang, that opens at the point. The tongue is forked ; the front teeth are small ; and the four canine teeth in either jaw are crooked and flexible, being raised, or lowered, for instilling the poison.

These noxious animals are viviparous, producing seven or eight vipers, from eggs that are hatched internally, after a gestation of about three months. They feed on frogs, toads, lizards, mice, and even on birds, which they swallow entire : when the young vipers are in danger, they retreat into the maternal uterus.

Having already pointed out (article POISON) the treatment to be adopted, if any person be stung by vipers, we shall at present only remark, that the flesh of these vermin is very nutritious ; so that it proves an excellent restorative to persons reduced by long continued sickness ; and, though its virtues may have been exaggerated, it may be beneficially eaten by those who are afflicted with leprosy, scorbutic, rheumatic, or other chronic complaints.

VIPER's BUGLOSS, the COMMON, or *Echium vulgare*, L. an indigenous biennial, growing in sandy corn-fields, walls, and rubbish, particularly on the clay thrown out of coal-mines : it flowers from June till August.—This vegetable is not relished by cows, and is refused by horses and goats ; but its strong hairy flowers are fondly visited by bees.—From the flower-stalks, DAMBOURNEY obtained a dye of a fine olive-green shade.

VIRGIN's-BOWER. See TRAVELLER'S-JOY.

VITRIOL, a compound salt, formed by the combination of zinc, copper, or iron, with the sulphuric,

or

or vitriolic acid; and which is either white, blue, or green, according to the metal employed.

White Vitriol, or Vitriol of Zinc, is found in the mines of Goslar, in Saxony, in a native state, and consists of white transparent pieces; but, the quantity thus obtained being insufficient for the demand, this salt is generally prepared by mixing 5 parts of sulphuric acid with 20 of distilled water, and gradually adding 3 parts of zinc: when the ebullition ceases, the liquor is strained; and, after being evaporated, it is deposited in a cool place, where it shoots into white crystals. It is sometimes employed by painters, for the purpose of speedily drying oil-colours: its taste is nauseous, though sweetish; being frequently given as an emetic, in doses of from 5 or 6 grains to half a dram; the operation of which is very powerful; and such drug ought therefore to be regularly prescribed. But its chief utility is that of an astringent and desiccative, in external applications: thus, when dissolved in the proportion of 16 grains in 8 oz. of water, with the addition of 16 drops of weak vitriolic acid, it forms an useful *collyrium*, or eye-water. A solution of 2 drams of white vitriol, and a similar quantity of alum, in a pint of water, is likewise employed for cleansing foul ulcers, and repelling cutaneous eruptions.

Green Vitriol consists of sulphuric acid diluted with 10 or 12 times its weight of water, in which iron-filings are dissolved: when the effervescence ceases, the mixture is for some time placed in a sand-bath; next, the liquor is strained through paper; and, after being evaporated, it shoots into rhomboidal crystals, which are also termed

Salt of Steel.—Green vitriol is given in doses of from half a grain to 5 grains; according to the age, strength, or case of the patient; being one of the safest forms in which iron can be administered.—See vol. iii. p. 31.

Blue Vitriol, is chiefly imported from Italy, paying a duty of $2\frac{1}{2}$ d. per lb. It is made by stratifying plates of copper with sulphur; and, on slow combustion, the sulphuric acid corrodes the copper: the metal is then boiled in water, till the saline particles are dissolved; when, after repeated solution, and subsequent evaporation, the whole is reduced to the crystallizing point.—Vitriol of copper is chiefly employed externally as a caustic, to remove the flesh of fungous ulcers; for which purpose it is very useful: on account of its virulent properties, however, it ought never to be administered internally, without medical advice.

VITRIOLIC ACID, SULPHURIC ACID, or OIL OF VITRIOL, an useful liquid, prepared by the combustion of sulphur in close vessels, with the addition of 1-8th or 1-12th part of nitre, and a little water, to condense the vapour: after which it is concentrated and purified by evaporation. Beside the purposes to which it may be applied (and which are stated in the articles BLEACHING and SULPHUR), this acid, when properly diluted, has successfully been administered in hemorrhages, fevers of the typhus kind, and the itch; in doses of from 40 to 60 drops in water: but, when combined in the proportion of one part, with eight of lard, or other unctuous matter, it forms an efficacious application to the parts affected, in chronic cutaneous eruptions, and likewise as a rube facient

cient in rheumatisms and local palsies.

VIVES, in farriery, a disorder affecting horses, and which differs from the strangles only in this respect, that the tumors in the former do not suppurate; and may therefore be dispersed by covering the diseased animal with blankets; by rubbing the tumefied part with the ointment of marsh-mallow; by moderate blood-letting, when a plethoric habit requires it; and giving one or two gentle purgatives (see vol. ii. p. 489). But, if these remedies fail to remove the inflammation, it will be necessary to promote a suppuration, and to adopt the treatment stated in the article **STRANGLES**.

Vives appearing in old horses, indicate an internal decay, which no medicines can remove; or are symptomatic of the **GLANDERS**: in the latter case, the animals must be treated in the manner pointed out vol. ii. pp. 372-73.

ULCER, is an ichorous or purulent solution of soft parts. This affection may arise from a variety of causes, such as cancer, scrophula, scurvy, &c. but, as a discussion of these would exceed our limits, we shall only give an outline of the general treatment.

In order to effect a re-union of the diseased part, recourse should be had to such applications as will cleanse the wound; for which purpose, emollient poultices are eminently serviceable. If the edges become foul and hard, it will be advisable to apply the caustic (see vol. i. p. 470); an expedient requiring great precaution, but which is far preferable to the knife.

To soften the wound, or to induce a discharge of good matter, the **yellow BASILICON ointment**,

either alone, or with the addition of turpentine, or red precipitate, will generally prove efficacious.—Where excoriations appear around the ulcer, they should be anointed with spermaceti, or any other cooling ointment. Sometimes they are of so indolent a nature, as to heal very slowly: in such instances, they may be washed with lime-water, or dressed with a pledget dipped in tincture of myrrh. If the patient be afflicted with considerable pain, inflammation, or fever, blood-letting, and a cooling regimen, together with rest, will, in most cases, procure the desired relief. Inveterate ulcers ought never to be healed precipitately; for such practice may be attended with asthma, and other disorders: a liberal use of the bark will, in general, be productive of benefit, in obstinate ulcerations.

A new and ingenious method of treating old ulcers of the legs, has lately been recommended by Mr. **BAYNTON**, of Bristol; and which has since been successfully adopted by many respectable surgeons. It consists in carefully drawing the skin that surrounds the ulcer, towards its centre; and which is gradually effected at each dressing, by the aid of slips of adhesive plaster (for instance, that of diachylon, or litharge), spread on smooth linen cloth. These slips must be made 2 inches broad, and of such a length that, after passing round the limb, from 4 to 5 inches may remain: the middle of this piece is to be applied to the sound side of the limb, opposite to the inferior part of the ulcer, about one inch below the lower edge of the sore, and the ends are drawn over the ulcer with as much gradual extension as the patient can bear. Other strips

strips are then to be placed in a similar manner, each above and in contact with the other, until the whole surface of the sore and limb be completely covered, at least one inch below, and two or three inches above, the diseased part. Next, the limb is to be defended by rollers of soft calico, passed round as smoothly as possible, above and below the ulcer. In cases of violent inflammation, and considerable discharge, Mr. B. recommends repeated affusions of cold water: the patient should take frequent exercise, and apply this bandage early in the morning; as the limb is then less liable to swelling. In a short time, the pain, which at first is considerable, will be found gradually to abate, while the limb recovers its tone and sensibility.

ULCER, in farriery, is a solution of the softer parts together with the skin, in horses: it may be produced by inflammation, a collection of acrid humours, or other internal causes.

Without entering into a discussion of the different kinds of ulcers, together with the proper treatment of each, we shall subjoin a few directions relative to their general management.

The first object of attention will be, to promote the discharge of a thick purulent matter; which may often be effected by the common green or digestive ointment; but, in case the sore do not *digest* favourably, in consequence of such application, it will be advisable to dress the part with a mixture of the salve before mentioned, and spirit of turpentine; at the same time laying an *emollient poultice* (see vol. ii. p. 491) over the whole. If, notwithstanding these remedies, the lips of the wound become cal-

lous, they must be fomented with strong and hot decoctions of marsh-mallow and chamomile; after which the surrounding parts must be superficially scarified, and dressed with the following digestive ointment; such scarification being repeated till the callosity be removed: Let 2 oz. of yellow, and 1 oz. of black, basilicon, be melted together over a fire: on taking off these ingredients, 1 oz. of turpentine should be gradually added; and, when the mixture is cool, half an oz. of finely pulverized red precipitate must be duly incorporated. As soon as the callosities have disappeared, and the discharge has acquired a proper consistence, it will be necessary to dress the wound with a small portion of yellow or black basilicon, and to cover the whole with a pledget of tow, spread with the following ointment: Yellow basilicon, and black resin, 4 oz.; Burgundy pitch, 2 oz.: let these ingredients be melted in a pint of olive-oil; and, after taking the mixture from the fire, 2 oz. of turpentine should be added.

After these applications, the wound will *incarn*; and, when the scar is nearly formed, the cure may be completed, by dressing the surface with a small portion of the tincture of myrrh.

This treatment is generally pursued in common ulcers; but, if any sinuses, or cavities, be formed, they must be opened; then filled with a pledget of lint; and well covered with warm digestive ointment; over which must be laid a second pledget, consisting of tow spread with the same unguent. Such dressing ought to be repeated two or three times, or oftener, if necessary: where callosities arise, they may be removed by adopting the

means above stated ; after which a similar method will be sufficient to heal the ulcer.

UMBER, or **GRAYLING**, *Salmo thymalus*, L. a species of the salmon, which frequents rapid, clear streams, and particularly those flowing through mountainous countries. It inhabits principally the rivers of Derbyshire, and those of Scotland ; though it is occasionally caught in the stream near Christchurch, Hants. This fish seldom exceeds 16 inches in length, and weighs from 2 to 3½ lbs. : it is of an elegant form, somewhat resembling the trout, but of a lighter colour.

The umber is remarkable for its velocity in swimming : the proper season for angling is in the months of March and April, when this fish may be easily taken with a strong line and hook ; as it is exceedingly voracious, and will eagerly take a bait.—Its flesh is very delicate ; and its intestines are employed by the Laplanders as a substitute for rennet, to coagulate the milk of the rein-deer.

VOMITING, is the inverted vermicular motion of the muscular fibres of the stomach and intestines ; being attended with convulsions of the abdominal muscles and midriff : when this action is so mild as to be confined to the stomach, it is then termed nausea.—As vomiting is a frequent symptom in other diseases, especially in fevers, we shall here consider it only as a primary complaint.

Causes :—Crudities accumulated in the stomach ; such as bile ; mucus ; hard, indigestible food ; scirrhus, and other organic affections ; acrid and poisonous substances taken by the mouth ; worms ;

ruptures ; nephritic complaints, or stone, as well as violent passions.

Cure :—If the stomach be foul ; or if hurtful substances have been swallowed, emetics should be administered in the manner described, vol. ii. p. 225 ; but, in cases where poisons have been taken, the antidotes recommended under their respective heads, should first be resorted to ; and the cure be completed by strengthening medicines. In callosity, or scirrhus of the stomach, benefit has often been derived from the internal use of soap, mercurials, and other alteratives.—Worms require the treatment already suggested, for their expulsion.—If vomiting has been induced by violent passions, especially by anger and vexation ; it will be advisable to take a tea-spoonful of vitriolated kali in spring-water, and, on the following morning, from 10 to 15 grains of powder of rhubarb : the beverage should consist of barley-water, and other diluents, with cream of tartar, and a few grains of nitre. Persons of an irritable temper, and consequently more liable to a return of this complaint, ought at least to abstain from spirituous liquors, and high-seasoned food.

Where the vomiting, or nausea, continues after the stomach is cleansed, about a scruple of salt of wormwood should be taken in water ; and immediately after, two tea-spoonfuls of lemon-juice in the same liquid ; which remedy may be repeated every two or three hours ; drinking balm-tea in the intervals. The Columbo-root has, likewise, been of great service in these cases.

Infants at the breast are often troubled with vomiting : if the milk

milk be coagulated, and the stools have a similar appearance, or a green colour, and an acid odour, the testaceous powder should be given, as directed p. 196 of this volume, after which, the infant ought to drink pure whey; but, during the attack, luke-warm water must be administered in copious draughts: farther, a mixture of sweet-oil and laudanum may be rubbed in, or warm cushions filled with aromatic plants, be applied to the pit of the stomach. If such vomiting be followed by great debility, a few teaspoonfuls of mulled red-wine, with a little nutmeg, may be allowed with benefit; though this practice should never be adopted on trivial occasions.

URINE, is that part of the blood which is separated by the extremities of the arteries connected with the kidneys. It drops by the ureter into the urinary bladder, where it usually remains a few hours; and is prevented from returning into the ureters, by their entrance being oblique, and provided with valves.

As this secretion is of importance in the animal economy, we shall give a concise view of the principal diseases arising from that source. It deserves to be previously stated, that the obstruction of the urinary passage is always attended with greater and more immediate danger, than that of the bowels.—When the inclination to make water is succeeded by a discharge of a few drops only, it is termed a *strangury*; if the difficulty of voiding it be attended with pain, a *dysury*; and a total suppression, is called *ischury*.

Causes.—The most frequent are, an acrid state of the blood; spasms; compression of the neigh-

bouring parts; scirrhus, or cancerous tumors forming internally; suppressed perspiration; repulsion of rheumatism, gout, and cutaneous eruptions; stone in the bladder or kidneys; inflammation of the bladder, &c.

Cure.—In urinary affections arising from acrimony, suppressed perspiration, or spasms, it will be advisable to take antispasmodics, combined with mild sudorifics; for instance, emulsions with tincture of guaiacum; camphor, &c.: at the same time, warm fomentations should be applied to the lower belly; or, tepid bathing, followed by emollient clysters, may be of still greater advantage. If the disorder originate from a repulsion of rheumatic, gouty, and other morbid matter, attempts must be made to reduce the affection to its former seat, by means of diaphoretics; blisters applied to different parts, and the use of warm baths. In cases of inflammation of the bladder, or stone, we refer the reader to vol. i. p. 278; and p. 139 of the present volume.

In every stage of these painful maladies, the patient should take lukewarm, mucilaginous liquids; such as solutions of gum-arabic, or tragacanth, in water; or linseed-tea; and a bland, nutritious diet. If, however, the desired relief be not speedily obtained, proper medical aid ought to be procured, without delay.

Sometimes the urine is involuntarily emitted, but without pain; a complaint which frequently affects children. It generally originates from indolence; so that moderate correction will prove the most certain remedy: it may, however, also arise from a weakness of the sphincter of the bladder; in

which case, tonics, such as bark, valerian, &c. together with blisters applied to the loins, or to the sacral bone, will be the most proper means. But, where it proceeds from worms, anthelmintics may be employed with advantage.

Another affection of the urinary system, is *diabetes*, or an immoderate and long-continued discharge of urine, the quality of which is, in most cases, preternaturally changed: thus, in some instances, it has the smell, colour, and taste of honey; while, in others, it is entirely limpid.—It is a remarkable circumstance in this affection, that the excretion of urine exceeds the quantity of liquid taken by the patient.

Causes.—Spasms; general debility, or local weakness in the kidneys; strong diuretics, and whatever may induce a laxity of the body.—This malady is seldom cured, unless it be attended to in its earlier stages.

Treatment.—The remedies hitherto prescribed for this affection, are tonics, such as bark, with small doses of rhubarb, or mixed with the diluted vitriolic acid; and the daily use of mucilaginous drinks, conjoined with lime-water, either alone, or with milk. But the most important point appears to be, *abstinence from all vegetable food*; a practice which has been attended with the best effect.—See also *Artificial Muxa*.

Lastly, there occurs sometimes an alarming affection of the bladder, when the urine is mingled with blood.—If this malady be suffered to continue for a long period, it may prove fatal; but, in general, it is not attended with danger.

Causes.—Violent exertions and local injury; inflammation of the

kidnies; drastic and diuretic medicines; excess in sensual pleasures; suppression of the piles, &c.

Cure.—When the disorder arises from debility, tonics, combined with astringents, should be employed. The loins ought to be fomented with vinegar and water; arquebuse; or a decoction of sage and rose-leaves.—If acrid matters produced such bloody discharge, it will be necessary to resort to mucilaginous substances and antispasmodics; such as chamomile, rue, opium, &c: but, when it is occasioned by suppressed evacuations, these ought, if possible, to be speedily restored.—Where the passage is ulcerated, it will be useful to take the Peruvian bark with sal ammoniac, or lime-water and milk.—In cases of *STONE*, the reader will find the proper remedies stated under that article.

USQUEBAUGH, a strong, compound, spirituous liquor, which is prepared in the following manner:

Take of cloves, cinnamon, and nutmegs, each 2 oz.; of caraway, anise, and coriander-seeds, each 4 oz.; and half a pound of liquorice-root, cut in slices. Let these ingredients be bruised, and distilled with 11 gallons of proof-spirit, and 2 gallons of water, till the *faints* begin to rise. When the liquor is about to run, 2 oz. of British saffron, tied in a linen bag, should be fixed to the extremity of the worm, so that the spirit may filtre through, and extract all the virtues of the saffron. When the distillation is completed, the whole should be sweetened with a sufficient quantity of double-refined sugar, and decanted for use.

Usquebaugh is chiefly employed as a *cordial*, and may occasionally be

be drunk with advantage, by persons who have undergone great bodily fatigue; but, as the possession of such *luscious* beverage is apt to introduce detestable habits, we conceive, that diluted rum, or other simple spirit, would afford a proper substitute for this expensive compound.

USURY. See **INTEREST.**

UVULA, in animal economy, denotes a soft glandular body, of a conical figure, that is suspended from the palate, or posterior part of the roof of the mouth, perpendicularly over the chink of the wind-pipe, which lies at the root of the tongue.

The *uvula* is by Nature designed to modify the current of cold air, previously to its entering the lungs. As the affections, to which this part is exposed, do not essentially differ from those of the **TONSILS**, we shall conclude with remarking, that a gargle, consisting of a decoction of Peruvian bark, sage, rose-leaves, or other astringents, has generally proved efficacious, in cases where this useful gland is so relaxed or inflamed, as to be attended with a difficulty of swallowing.

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WADD. See **BLACK-WADD.**

WAFERS, are thin circular cakes of paste, employed for sealing letters, and for other purposes.

Wafers are made by mixing the finest wheaten flour, either with the whites of eggs, or with a solution of isinglass, and a small portion of yeast: these ingredients are thoroughly incorporated, and reduced to a proper consistence, by the addition of gum-water. The batter is then spread on tin-plates, or poured in a flat iron form, and placed over a charcoal-fire, where it is speedily baked; after which it is cut out to different round sizes. The paste may be tinged of any colour; for instance, red with a solution of Brazil-wood, or vermilion; blue with that of indigo, or verditer; and yellow with saffron, gamboge, or turmeric.

WAGES. See **LABOUR.**

WAGGON, a species of wheel-carriage, the form of which varies, according to the different purposes for which it is designed.

Few implements of husbandry are of greater importance, or admit, perhaps, of more essential improvements, than wheel-carriages. Hence we cannot but express our surprize at the infatuation of those farmers, who employ large waggons, on the erroneous principle, that a greater quantity may thus be carried at one time; while they overlook the injury which such unwieldy machines necessarily occasion, both in their fields, and particularly on roads, by making deep ruts, and otherwise tearing or breaking up the soil. The principal objection to the use of these heavy vehicles on farms, is their *weight*; which requires an increased number of horses or cattle, that

that might be more profitably employed in tillage. The same observation is applicable to the common road or stage-waggons: these usually weigh about $2\frac{1}{2}$ tons, and are drawn by 8, 10, or more horses, according to the distance to which they travel. Now, a single horse of a moderate size will, in a well-constructed vehicle, and on tolerable roads, draw 30 cwt. with ease, independently of the weight occasioned by the cart; and it will perform this task for a series of days, months, and even years. But, if

the common waggons were laden according to such draught, they ought to carry from 20 to 40 tons; a weight exceeding their strength, and incompatible with their mode of construction. The superiority of small carriages being too evident to require any farther demonstration, we shall subjoin a table, exhibiting the load which waggons and carts are, by act of parliament, permitted to draw on the turnpike-roads; and which includes both the whole incumbent load, and the vehicle itself.

	Summer Weight.			Winter Weight.		
	tons.	cwt.	qrs.	tons.	cwt.	qrs.
Waggons, with wheels not exceeding 9 inches, }	6	0	0	5	10	0
Ditto, with wheels not exceeding 6 inches, }	4	5	0	3	15	0
Ditto, with wheels not exceeding 3 inches, }	3	10	0	3	0	0
Carts, with wheels not exceeding 9 inches, }	3	0	0	2	15	0
Ditto, with wheels not exceeding 6 inches, }	2	12	0	2	7	0
Ditto, with wheels not exceeding 3 inches, }	1	10	0	1	7	0

Our limits not admitting a farther disquisition, we request those readers, who wish to obtain additional information on this subject, to consult Dr. ANDERSON'S "*Dissertation on the Means of Constructing Waggons, and other Carriages employed for the Purposes of Agriculture*;" an ingenious essay, which is inserted in the 4th vol. of his "*Recreations in Agriculture*," &c.—See also the article CART.

WAGTAIL, or *Motacilla*, L. a genus of native birds, consisting of two species, namely:

1. The *alba*, or White Wagtail, frequents the sides of ponds and rivulets: its head, back, and neck,

are black; the breast and belly white; its long tail being always in motion.

2. The *flava*, or Yellow Wagtail, continues in Hampshire for the greater part of the year; and migrates also to the northern parts of Britain.—The male of this species is a bird of exquisite beauty: its breast, belly, thighs, and vent-feathers, being of a very bright yellow; the throat is marked with large black spots; the head, and upper surface of the body, are of an olive-green; and the tail is partly white and black.

These birds construct their nests on the ground, in corn-fields; where the

the female lays from 4 to 7 white eggs, and generally broods twice in the year.

Wagtails feed on worms and insects, which they pursue to the edge of waters: in the spring and autumn, they constantly follow the plough for that purpose; and their breed ought, therefore, by every possible means to be encouraged.

WAINSCOT, denotes the timber-work employed for lining the walls of apartments: it is usually made in the form of pannels, and painted, in order to serve as a substitute for hangings.

According to the modern practice of building, rooms are *wainscoted* only to the height of two or three feet; the intermediate space, to the ceiling, being usually covered with paper. The walls, however, ought to be thoroughly dry, before the wainscot is fixed; as the moisture exuding from the bricks is apt to loosen the pannels, and thus disfigure the workmanship. With a view to prevent such accidents, charcoal and wool are usually placed between the timber and the wall; but the most certain method of preserving the wainscot, consists in *priming* the inner sides of the joints with white lead, or with a mixture of Spanish brown and linseed oil.

WAISTCOAT. See CORK-TREE, vol. ii. p. 64, and FLANNEL.

WAKE-ROBIN, CUCKOW-FINT, or LORDS and LADIES, *Arum maculatum*, L. a native and hardy perennial, growing in shady places, ditch-banks and rough grounds; flowering in May and June.

Both the bulbous root, and the leaves of this vegetable, in a fresh state, are extremely acrid. Nevertheless, the former has sometimes been used internally as a powerful

stimulant, and externally as a substitute for blisters. When dried and pulverized, these roots lose all their acrimony, and afford an almost tasteless farinaceous powder. According to Dr. WITHERING, good *bread* may be prepared from them, as well as an excellent *starch*.—The French manufacture from the same root, when properly dried and reduced to powder, a harmless *cosmetic*; which is sold under the name of *cypress-powder*. Such preparation may also, and, we conceive, with greater advantage be used in domestic economy, instead of *soap*.

WAKING, or WAKEFULNESS, denotes that state of the body, which is opposed to sleeping.—Both are alike important to the preservation of health; but waking, in particular, ought not to be prolonged beyond a proper time; as it exhausts the vital spirits; disorders the nerves; and *unhinges* the whole system: hence, acute head-achs, vertigoes, &c. are the inevitable consequences; because the whole mass of the fluids becomes vitiated, and the animal frame is at length subject to an uncommon degree of irritability and excitement, on the slightest occasions.

In the present artificial state of society, many persons of active minds, and great susceptibility, complain of *watchfulness*; which shortens their days, renders their life unhappy, and is sometimes succeeded by *insanity*.—As the source of this malady may, in general, be attributed to an unbounded desire of acquiring wealth, power, or fame, we shall briefly remark, that *moral* arguments will mostly prove unavailing, where the primary education has been defective.

tive. Instead, therefore, of resorting to opium, spirits, or other stupefying liquors, we advise such unfortunate victims of a disordered imagination, to adopt a more frugal mode of life; to take sufficient bodily exercise; not to indulge in nocturnal speculations; and, if these means be ineffectual, to resort either to the tepid bath, or to employ general friction over the whole body, for at least half an hour, previously to their repose.— See also BED-TIME.

WALKING, is one of the most salutary kinds of exercise. For this purpose, dry, airy, and elevated situations are preferable to such as are low and moist; though, during the summer, a walk in a meadow or forest, is equally agreeable and conducive to health. No woods, marshy or damp meadows, however, should be selected, particularly in autumn, when the leaves decay on the ground. In taking this exercise, it will farther be advisable to walk with a moderate pace, especially against the wind; but the practice of *reading*, on such occasions, is equally absurd and detrimental to the eyes; independently of the accidents that may arise from falling.

Walking is of eminent service to persons employed in sedentary occupations, and particularly to those who are confined in cities: it promotes the circulation of the blood; preserves the body in a proper temperature; facilitates the motion of the lungs; and relieves the contraction of the legs, which is occasioned by long-continued sitting. Indeed, its beneficial consequences are so obvious, that hypochondriacal and hysterical affections have often been effectually removed, by

duly persevering in this wholesome exercise.

In teaching children to walk, they should on no account be placed too early on their feet, or upheld by leading-strings; as, by such practice, their weak legs frequently become *bandy*: not less improper and pernicious are the circular *go-carts* employed for this purpose by injudicious parents, who are anxious to see their infants *walk*, before they have acquired sufficient strength to *stand*. Hence it will be more prudent to place them on a soft carpet; or, (if the weather be serene, and the ground perfectly dry) on a lawn or grass-plot. In such situations, surrounded with play-things, they may *creep* in every direction, support themselves either by chairs or trees; and, though occasionally falling, they will speedily learn to be more cautious. It would be superfluous to enlarge on this subject, which now begins to be better understood; and, if the simple rules, on which its practice depends, were more generally followed, there would be less occasion to deplore the fate of deformed or crippled children.

WALL. See BUILDING.

WALL-BARLEY. See BARLEY.

WALL-CRESS, the COMMON, or CODDED MOUSE-EAR, *Arabis thaliana*, L. an indigenous plant, growing on walls, roofs, and in dry, sandy pastures: it flowers in the month of May.—The Wall-cress seldom exceeds the height of 4 or 5 inches; it produces small white blossoms, which are succeeded by long slender pods, containing minute round seeds.—This plant is said not to be relished by sheep, and is wholly refused by hogs; but
we

we are informed by BECHSTEIN, that sheep are so remarkably partial to the Coddled Mouse-ear, as "to run after it."

WALL-PERPER. See Pepper-STONE-CROP.

WALL-WORT. See Dwarf-ELDER.

WALNUT-TREE, or *Juglans*, L. a genus of, exotic trees comprehending 8 species; the principal of which is the *regia*, or Common Walnut-tree. It is originally a native of Persia, and attains, in this country, the height of from 50 to 60 feet; having a beautiful erect trunk, that branches out into a large spreading crown, which is furnished with pinnated leaves. There are numerous varieties, generally raised for their palatable fruit, which ripens from the beginning of September till the end of October; but the most esteemed are the Double Walnut, the Large Walnut, the French Walnut, the Thin-skinned, and the Late Walnut.

The Common Walnut-tree is propagated by drilling the ripe, dry nuts, together with their external rind, at the distance of one inch from each other, and in rows nine inches asunder; in a light garden soil, that has been well ploughed or trenched. If the autumn be dry, they may be sown in that season; in the contrary case, the nuts must be preserved in dry sand till the month of February, or early in March, when they may be set in the manner above directed. In the succeeding winter, it will be advisable to shelter the nuts either with rotting dung, decayed leaves, or with tanner's waste, over which flat stones or slates may be placed, till they begin to shoot, when such covering will become useless. Should

the ensuing summer prove dry, it will be proper to water the young plants; and those in a prosperous condition may be removed in autumn, into beds arranged in rows one foot asunder, and at the distance of four inches from each other in the row: the weaker plants must be suffered to remain in the seed-bed for another year. Thus, the Walnut-trees ought to be trained with single stems, till attaining the height of six or seven feet; when they may be suffered to form heads; as the branches will then be above the reach of cattle.

The trees should now be transplanted to a deep rich soil (though they also flourish on chalky lands), six feet asunder, and in rows at a similar distance, in the form of a quincunx, till they bear fruit. Such as promise to be the most productive, may then be selected, and left for bearing, while the others are to be planted out for timber: the former must be *thinned* as they increase in size, by removing every intermediate tree, till they stand at the distance of from 24 to 48 feet from each other, according to the richness of the soil, and the progressive growth of the trees.

In trimming the stems of Walnut-trees, Mr. FORSYTH directs the shoots and small branches to be separated close to the *bole*, or trunk; but, when the operation of lopping is performed, or any diseased, damaged, or cross branches, are to be pruned, he recommends the excision to be made at a *fork*, or *eye*; as part of the branch will otherwise decay, and thus materially injure the tree: in both cases, however, it will be requisite immediately to apply the composition already described, vol. i. p. 88; and 238 of the present vol.

The

The Walnut is equally valuable as a timber, and as a fruit-tree. Its wood was formerly often employed both for building and in the manufacture of household-furniture; but, being very brittle, it is at present superseded by mahogany, and other foreign timber. Nevertheless, it is highly prized by joiners and cabinet-makers, for tables, gun-stocks, and other light articles; as it is beautifully veined, and admits of a fine polish. Farther, these trees are well calculated for planting them in the borders of orchards; because their large spreading heads shelter the smaller, and more weakly fruit-trees, from the effects of boisterous winds:—an infusion of their leaves in boiling water, mixed with soap-suds, urine, and lime-water, has, according to Mr. FORSYTH, been found very efficacious in destroying worms, and slugs in the ground, as likewise for exterminating insects on trees.

The fruit of the Walnut-tree is used at two different periods of its growth, namely, when green, for pickling, and in a ripe state, at the dessert. For the former purpose, the nuts are fit in July or August, when they are about half, or three-fourths grown; but those only which are free from spots, should be selected, and plucked off the trees carefully by the hand.

Walnuts attain to maturity in the months of September and October, when they are usually beaten down by means of long poles; for, as this fruit grows principally at the extremities of the branches, indolent or timid persons find it too troublesome to gather it by hand. The former practice, however, ought to be relinquished; as it is very detrimental to the fertility of the trees, and breaks or otherwise

mutilates the young shoots: besides, the nuts cannot be easily preserved, when beaten down before they are sufficiently ripe.

The best method of gathering walnuts, is that of shaking the trees only at a time when the fruit has commenced spontaneously to drop; so that they may thus be easily obtained. If the nuts are to be kept for a considerable time, in a fresh state, they should first be well dried in an airy place, then packed in boxes, casks, jars or other convenient vessels, in alternate layers of fruit, and fine, clean sand, that has been previously deprived of all moisture by the sun, or in an oven. Thus, walnuts may be preserved in a sound state till the approach of summer; but, in case the kernels be shrivelled, Mr. FORSYTH recommends such nuts to be immersed in milk and water, for the space of six or eight hours, previously to being used; by which expedient they will become so fine and plump, as to be easily divested of their internal skin.

There are two other species, namely, the *alba*, Hickery-nut, or White Walnut; and the *nigra*, or Black Walnut. Both are natives of Virginia; but their fruit, though well flavoured, being very small, they are seldom cultivated in Britain, excepting as timber-trees; and may be raised in the same manner as the Common Walnut-tree.

The properties of walnuts agreeing with those of ALMONDS, and HAZEL-NUTS, the reader will revert to these articles, in the alphabetical series.

WALTON-WATER, is obtained from a mineral spring, which rises in the vicinity of Tewkesbury, in the county of Gloucester. It contains

contains a small portion of iron dissolved in fixed-air; of absorbent earth combined with hepatic air; of vitriolated magnesia, and muriated mineral alkali; but the proportions of these constituent parts have not been accurately ascertained.

Walton-water is chiefly efficacious in obstructions and other affections of the glands: the dose varies according to the inveteracy of the disorder, the age of the patient, and other circumstances. This mineral spring, however, is seldom resorted to; though it promises to be of considerable use in scrophula, and many other diseases.—Farther information respecting its component parts, &c. may be derived from Dr. JAMES JOHNSTONE'S "*Account of the Walton-water, near Tewkesbury*," 8vo. 1s. 6d. Cadell, 1787.

WAR, a contest between two sovereigns, states, or large bodies of people: and as these are unwilling to submit the decision of their differences to arbitration, or equity, they generally resort to arms for that purpose.

War is always a national evil; and is justifiable only in cases of *self-defence*; though, by proper remonstrances, it might doubtless in many instances be avoided, together with all its horrors.—Like the duels between private individuals, which disgrace civilized Europe, war may for a short time gratify the rage of hatred, but it uniformly fails to answer the end for which it was commenced;—disappointing the wishes of the ambitious; betraying the interests of society; in short, being equally useless and distressing.

Defensive wars, however, may be justified by dire necessity; so

that the good wishes of the moderate, and pacific, must ever attend such exertions. In this point of view, the art of war is an useful and necessary pursuit; as its object is to defend persecuted virtue; to punish the daring aggressor; to curb ambition; and to oppose the unjust claims of turbulent neighbours: but, when warfare is wantonly *courted*, for contrary purposes, it deserves to be branded with infamy; and, as Count TURPIN ("*Essay on the Art of War*,") has justly observed, if he, who first reduced to rules the art of destroying his fellow-creatures, had no object in view but to gratify the passion of Princes, he was a monster, whom it would have been a duty to smother at his birth.

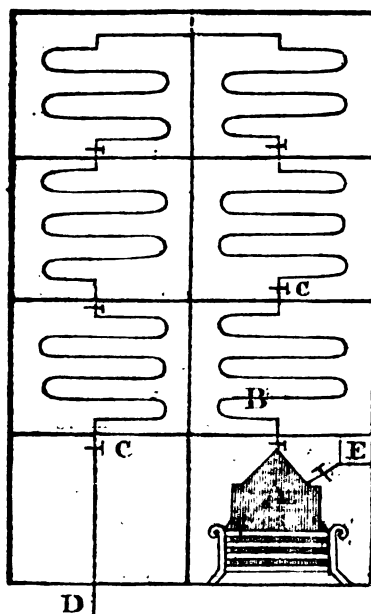
WARBLES, in farriery, are small, hard tumors arising on a horse's back, and generally occasioned by the heat, or friction, of the saddle in travelling.

As these injuries frequently occur in horses, after hard journies, or a severe chase, we would advise every person to whose care these noble animals are entrusted, minutely to examine the back every time when the saddle is removed. If any hardness or inequality should be perceived, from which a *warble* may probably ensue, the affected part must be bathed with the following liniment, that alone will be sufficient to check the progress of the swelling: Take of extract of lead, half an ounce; camphorated spirit of wine, two oz.; soft water, half a pint. Previously to adding the water, the extract and spirit should be well shaken, so that they may be duly incorporated.

WARMTH, a term expressing a moderate degree of heat.

The warming of houses, in a climate

mate so variable as that of Britain, is an object of the first importance, both to health and domestic comfort: hence, the invention or discovery of the most economical method of effecting such purpose, has engaged the talents of many able philosophers and artisans. Having already stated several of their useful contrivances, in the articles FIRE-PLACE, and STOVE, we shall now lay before our readers the following Cut, which represents a simple, and perhaps the least expensive, mode of communicating warmth from the *kitchen-fire*, throughout houses, manufactories, or other buildings, by means of *steam*.



A, is a copper furnished with a still-head, and fixed over the fire.

B, a leaden or copper tube, proceeding from the vessel, and being

heated by the steam of the boiling water: it is carried through eight rooms (as delineated in the figure above given); traverses that side of the wall where the chimney is usually erected; and is likewise provided with stop-cocks, C, C; by means of which the course of the steam may be accelerated, or retarded, at pleasure.

D, is the spot, at which the steam is discharged, after having circulated through the rooms.

E, is a cistern, by which the copper may be occasionally supplied with water.

This contrivance was proposed many years since, by Col. WILLIAM COOK: it deserves to be more generally known, on account of its obvious simplicity; uniting convenience with economy, in warming a number of rooms by *one* grate: a considerable saving in fuel will thence result, while the kitchen-fire may, at the same time, be employed in roasting, or in any other culinary process.—See the article Room.

WARTS, are small, hard, indolent excrescences, or tumors, that have a rough surface, and appear principally on the face and hands of young persons; though sometimes settling on other parts of the body. But, if such deformities occur in individuals advanced in years, and are of a livid hue, with a smooth surface, they frequently become CANCERS, and ought to be treated in a similar manner.

Warts do not, in general, require immediate attention: for, unless painful or troublesome, they will, in most cases, gradually disappear. Where, however, they increase in size, and are attended with pain, it will be proper to remove them by a ligature. Another method of extirpating

iripating them is by evulsion, or plucking them out; but such practice is by no means to be recommended; as the warts speedily return. A preferable mode of eradicating them, is by the application of escharotics, or mild cauteries; for instance, crude sal ammoniac, which must be moistened with water, and rubbed on the tumors, two or three times every day; or wetting them with the liquid salt of tartar; spirit of hartshorn, or tincture of Spanish flies; either of which has been successfully employed for this purpose.—Another mode of exterminating warts, as well as corns, has been recommended by the following plaster: Dissolve 1 oz. of gum galbanum in vinegar; evaporate the solution to a proper consistence; and add half an ounce of common tar, 2 drams of simple diachylon plaster, 20 grains of verdigrise, and an equal portion of sal ammoniac: let the two last ingredients be finely pulverized, and the whole be duly incorporated. Previously to its application, the warts ought to be well rubbed with moistened soap, again dried, and the plaster renewed every 12 hours. In obstinate cases, however, it will be necessary to resort to internal remedies, and to change the milk-diet of children, by allowing them a greater proportion of animal food.

WART-WORT, CHURN-STAFF, CAT'S-MILK, or SUN-SPURGE; *Euphorbia helioscopia*, L. an indigenous plant, growing in gardens, corn-fields, and cultivated grounds; flowering in July and August.—This vegetable, though eaten by cattle and sheep, imparts to the flesh of the latter animals a disagreeable flavour, and is also detri-

mental to their health.—The milky juice exuding from the stalk, tinges paper of a fine azure-blue colour.

WASHING, in general, signifies the cleansing of bodies or substances with water, and other abstergent ingredients.

Washing essentially contributes to cleanliness, and consequently to the preservation of health: hence, all persons ought to be habituated to this salutary practice, from their earliest period of life. Great caution, however, is requisite in washing infants: for which purpose, the water ought at first to be tepid, or of a moderate warmth; then gradually reduced to a cool temperature; and at length, it may be used as cold as the common atmosphere of the season.—The head and neck must, farther, be rubbed during the whole process, with a wet sponge, and, together with the rest of the body, be immediately wiped dry with clean cloths; which in the winter should be previously warmed. Thus, children will be early inured to habits of cleanliness; and the attention of parents to this important object will be amply rewarded.

WASHING, in a domestic sense, expresses peculiarly the cleansing of family linen, by means of soap and alkaline solutions.—Although we have referred from p. 30, of our first volume, to this article, for an account of such vegetables as yield alkalies or pot-ash; yet, as these have already been stated in the progress of our work, we shall proceed to describe a washing machine that has lately been invented in Germany; and which promises to be superior to any similar contrivance hitherto suggested.

U

Descrip-

Description of a Washing Machine lately invented in Germany, by M. M. FISCHER and KERZIG.

(Fig. 2, A).—*a*, is a section of the washing cylinder, with its 16 ladles, projecting 4 inches; but of these ladles only 4 jut out internally, as represented by the dotted line at *b, b, b, b*.

c, the iron roller, which is on the outside, fixed to the bottom of the cylinder, by means of an iron cross at *d, d, d, d*, with screws or nails: it rests on the beam *e*, so as to be upheld in the four excavated columns or posts *f, f, f, f*, by the lever *g*, and to be either raised or lowered, and afterwards secured by the pins *h, h*, according to the greater or less depth of water.

i, the cistern, at the sides of which the four posts are firmly inserted.

(Fig. 2, B.) A bird's-eye view of the machine. The laths between the ladles may be here distinctly seen, together with the roller, *c, c*, as it rests on the beam or supporter *e, e, e, e*, and is secured by a cap, *K*.

l, the boarded floor above the cistern or reservoir of water, on which the person stands, when the cylinder is to be placed higher or lower.

By means of this excellent contrivance, we understand from the inventors, by whom it was first used for cleansing the felts in an extensive paper-mill, that from 14 to 18 shirts may be completely washed within one hour; and that the friction is far less than in performing that operation by the hand; while the foul water is not suffered to flow back into the linen, but is continually renewed. If table-cloths, &c. happen to be

greasy, they must be whirled round in the machine for the space of from 20 to 30 minutes; when it will be necessary to take them out; and, after rubbing them well with soap, to expose them again to the action of the engine for half an hour, when they will be found thoroughly cleaned. Fine linen may be inclosed in a bag, and washed in a similar manner, so as to prevent it from being injured by friction. There are, however, two points which ought to be strictly attended to; namely, the agitation of the water should not be too violent; and a sufficient quantity of foul linen must be thrown in at a time, in order to amount to such weight as will cause it to descend, after having been carried to the uppermost part of the cylinder. The only obstacle to the general introduction of this machine is, that it cannot be adopted in those situations which are not provided with a current or stream of water to work it; but, wherever a brook or rivulet occurs, such apparatus will be found highly serviceable in work-houses, great schools, prisons, and hospitals, not less than in private families; as 200 shirts may be washed by one person in the space of 12 hours. It may be erected in a mill-reach, so as to be set in motion by the immediate pressure of the water; or, by connecting its mechanism with the main cylinder of the water-wheel.

WASP, or *Vespa*, L. a genus of insects comprising 139 species, three of which only are natives of Britain.

1. The *Crabro*. See HORNET.

2. The *Vulgaris*, or COMMON WASP, is from half to three quarters of an inch in length: it is divided into three classes; namely, the

Fig. 2.A.

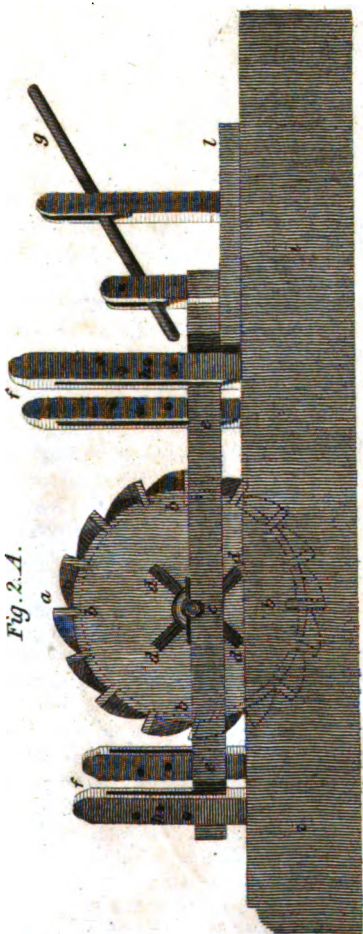
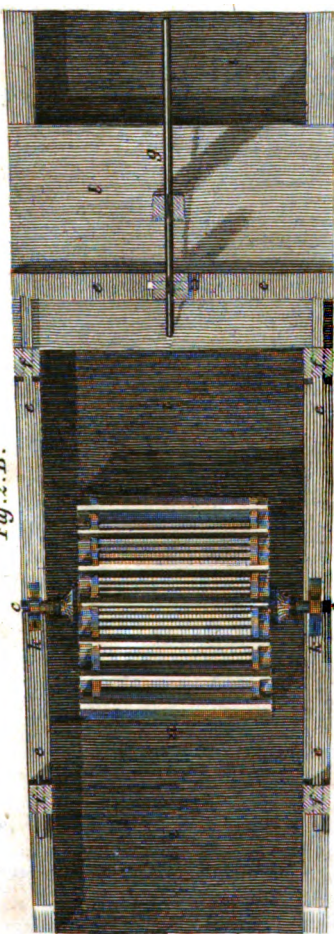


Fig. 2.B.



Washing Machine!
Invented in Germany.

the *queens*, or females, which are furnished with stings, and are much larger than any other wasp, on account of the numerous eggs they contain. The *males* are less than the *queens*, and are not provided with stings: the number of these two classes is nearly equal in a nest, amounting in general to 200 or 300. The *mules* are principally employed in constructing the nests, and in providing the other wasps and the young insects with food: like the females, they are furnished with long stings.

The common wasps build their nests in the ground, where the females deposit their eggs singly: these are hatched in the spring; and, in the course of three weeks, the young insects pass through the different states of larvae or grubs, and of chrysalids; when they become perfect wasps. The mules come first into existence; immediately enlarge the hole; and form the nest with fibres of wood, leaves, &c.; they feed the young males and females (more judiciously than some human parents) adapting the quantity and nature of such provision to the weakness of their stomachs. This food consists, first of the juices extracted from fruits and meat, but afterwards of the bodies of insects. As soon as each wasp acquires sufficient strength, it flies into the fields, and gardens, where the fruit is plundered, and bees are killed, with the view of obtaining their honey. Similar depredations are committed throughout the summer; but, in the month of October, when their supply begins to diminish, the males and mules attack the newly-hatched insects of their own species, and destroy them, together with the larvae, chrysalids, and eggs: they

then fall upon one another, till the frost and rain exterminate nearly the whole, excepting a few females; which, in the ensuing spring lay new eggs, and thus become the parents of a numerous progeny; as a nest of wasps, towards autumn, consists of from 14 to 15,000 cells.

3. The *coarctata*, or SMALL WASP, is about half an inch long: it is hatched like the preceding species, with which its habits also correspond. The nests of the Small Wasps are constructed of woody fibres, reduced to a fine substance resembling paper: they are of an oval form; being suspended from the branches of trees; and covered with a kind of varnish, that renders them impenetrable to water.

Wasps are not only destructive to grapes, peaches, and the more delicate kinds of fruit, but also to bees; the hives of which they attack and plunder, frequently compelling those industrious insects to change their habitation. To prevent such depredations, Mr. FORSYTH recommends several phials, or small bottles, to be prepared, towards the time when the wasps appear. These vessels are to be filled, half or three parts full, with a mixture consisting of the lees of beer or wine, and the sweepings of sugar, or the dregs of molasses: next, they must be suspended by yellow pack-thread, on nails driven into different parts of garden-walls, so as to reach nearly the bottom. When the bottles are filled with insects, the liquor must be poured into another vessel, and the wasps crushed on the ground.—Should the weather prove very hot, so that these marauders become very numerous, and will not enter the glasses exposed for their reception,

Mr. F. directs them to be touched on the back with a little oil, when they will instantly fall down; their bodies acquiring a black or green colour; and, the lateral pores through which they breathe, being closed up by the oil, they consequently perish.

As the proper remedies for procuring relief in the painful sensation arising from the sting of these insects, are similar to those employed for the *Sting of Bees*, we refer the reader to vol. i. pp. 231-32. If, however, any wasps be accidentally swallowed in beer, or other liquor, a small portion of honey, vinegar, and sweet-oil, may be mixed together; a tea-spoonful of which should be frequently taken; till the pain and inflammation abate. The efficacy of this remedy has been fully proved by experience.

WASTE LANDS. See LAND.

WATCH. See TIME-PIECE.

WATCHFULNESS. See WAKING.

WATER, a transparent fluid, destitute of colour, taste, and smell: it was formerly considered as one of the four elements: when perfectly pure, it does not spontaneously undergo any perceptible change; remains liquid in the common temperature of the atmosphere; becomes *solid*, at 32 degrees of FAHRENHEIT'S thermometer; and is converted into vapour, at 212°; but resumes its fluidity, on being reduced to any intermediate degree.

Water is capable of dissolving most of the natural bodies, and particularly salts; while it constitutes a material part both of the animal and vegetable kingdoms.

Till the latter end of the 18th century, water was generally believed to be a *simple* element, which might, by repeated distillation, be

converted into *earth*: it is now, however, demonstrated to be a *compound*.

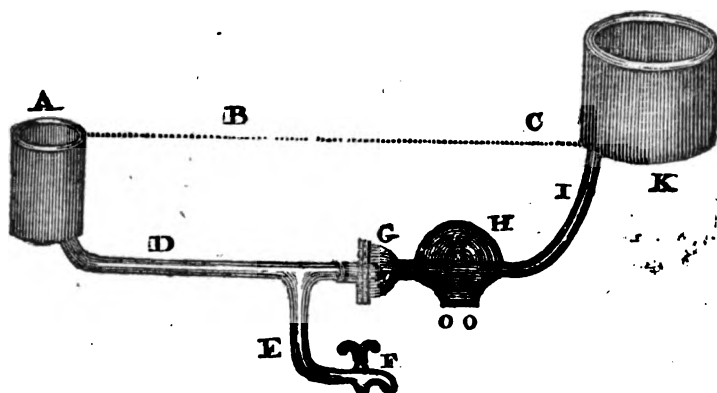
Water may be divided into two general classes, namely, *saline*, and *fresh*. The former is derived from the different seas which surround the globe: it contains a large portion of common salt, magnesia, &c.—See SEA-WATER.

Fresh water may, farther, be divided into *atmospheric*, which includes hail, rain, and snow-water, and also dew; *stagnant*, such as that of lakes, ponds, and marshes; and *running*, which comprehends spring, well, and river-water. To these may be added MINERAL WATERS, being impregnated with various earthy and metallic ingredients, from which they derive peculiar properties. Explicit directions for analyzing them, have been given in vol. ii. pp. 213-15.

Water is one of the most useful elements in the arts and manufactures, as well as in rural and domestic economy: hence, various machines have been invented, for the purpose of raising and diffusing this salutary fluid:—the following contrivances deserve particular notice.

The machine, of which the annexed figure will convey an accurate idea, was executed at Oulton, in Cheshire, by Mr. WHITEHURST, for the service of a brewhouse, and other offices, belonging to PHILIP EGERTON, Esq. Its design is, to raise water by the *momentum*, or force which this fluid acquires when confined: it having effectually answered the purpose, we have been induced to give a description of its constituent parts, from the 65th vol. of the "*Philosophical Transactions of the Royal Society*," for 1774.

A, re-



A, represents the original reservoir, or spring; the upper surface of which corresponds with the horizontal line B, C, and also with the bottom of the reservoir, K.

D, the main-pipe, which is $1\frac{1}{2}$ inch in diameter, and nearly 200 yards in length.

E, is a *branch-pipe* of similar dimensions, for the use of the kitchen-offices.—Mr. WHITEHURST observes, that these offices are situated 18 or 20 feet, at the least, beneath the surface of the reservoir, A, and that the cock, F, is about 16 feet below it.

G, represents a valve-box; and g exhibits the valve.

H, is an air-vessel.

o, o, represent the ends of the main-pipe, which are inserted in the air-vessel, and are bent downwards, to prevent the air from being driven out, when the water is forced into it.

W, denotes the surface of the water.

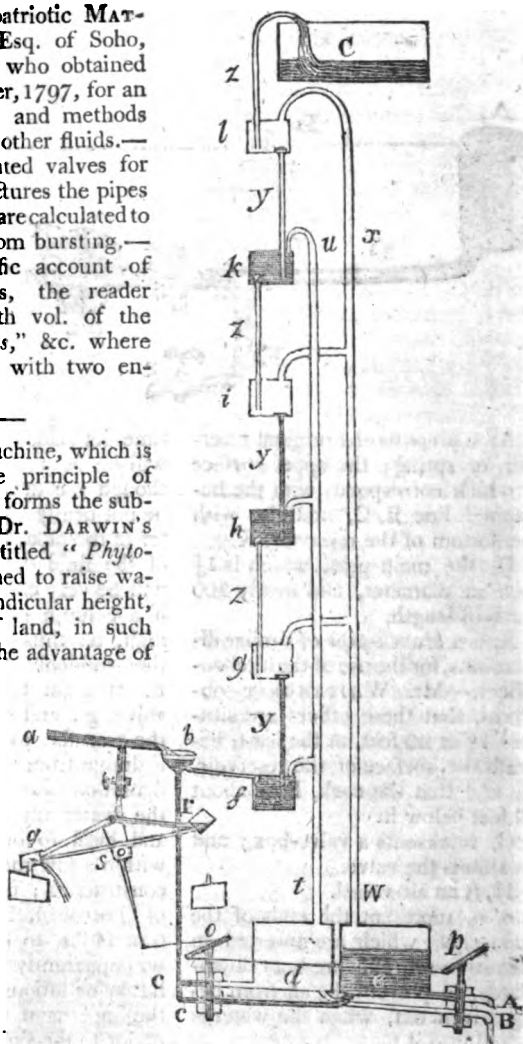
Mr. WHITEHURST remarks that, as water discharged from an aperture beneath a pressure of 16 feet perpendicular height, moves at the rate of 32 feet in one second of

time, its velocity from the cock, F, will be in a similar ratio. And, though the aperture of such cock be not nearly equal to the diameter of the pipe, D, yet the pressure of the fluid contained in the pipe will be very considerable: so that if a column of water, 200 yards high, be thus set in motion, and then suddenly stopped by the cock, F, its great force will open the valve, g; and condense the air in the box, H, as often as the water is drawn from the cock. This condensation was sufficient to force the water into the reservoir, K, and even to burst the vessel, H, within a few months after its first construction; though it was made of sheet-lead, in the proportion of 9 or 10lbs. to 1 square foot; and was apparently very firm. Hence it may be rationally concluded, that the impetus of the water is far superior to the simple pressure of the column, I, K; and is therefore equal to a greater resistance (if it were required) than a pressure of four or five feet perpendicular height.

This ingenious contrivance is now applied to a variety of machinery,

chinery, by the patriotic MATTHEW BOULTON, Esq. of Soho, near Birmingham; who obtained a patent in December, 1797, for an improved apparatus, and methods of raising water and other fluids.—Mr. B. has substituted valves for cocks, and manufactures the pipes of such materials, as are calculated to prevent accidents from bursting.—For a more specific account of these improvements, the reader will consult the 9th vol. of the "*Repertory of Arts*," &c. where they are illustrated with two engravings.

The following machine, which is constructed on the principle of HIERO's Fountain, forms the subject of a plate in Dr. DARWIN's admirable work, entitled "*Phytologia*:" it is designed to raise water to a great perpendicular height, for the irrigation of land, in such situations as have the advantage of a small fall.



a, b, is the stream of water.

b, e, c, represents the water-fall, supposed to be 10 feet.

d, e, are two leaden or iron-vessels, containing a certain quan-

tity of water, which may be computed to be about 4 gallons each.

f, g, h, i, k, l, are leaden vessels, each holding about 2 quarts.

p, p,

o, p, two cocks, each of which passes through two pipes, opening the one and closing the other.

q, r, is a *water-balance*, that moves on its centre *s*; and by which the two cocks *o*, and *p*, are alternately turned.

t, u, and *w, x*, are two air-pipes of lead, both internally one inch and a quarter in diameter.

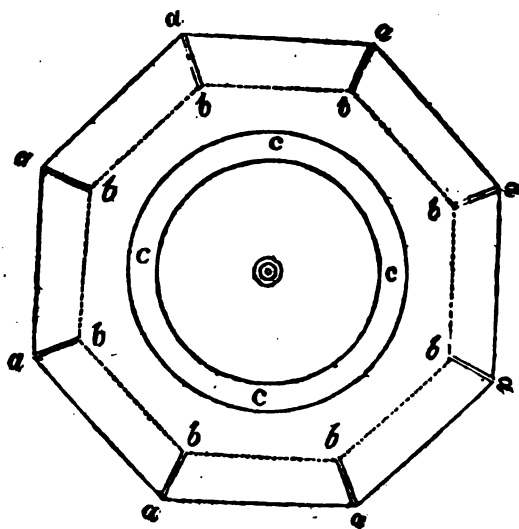
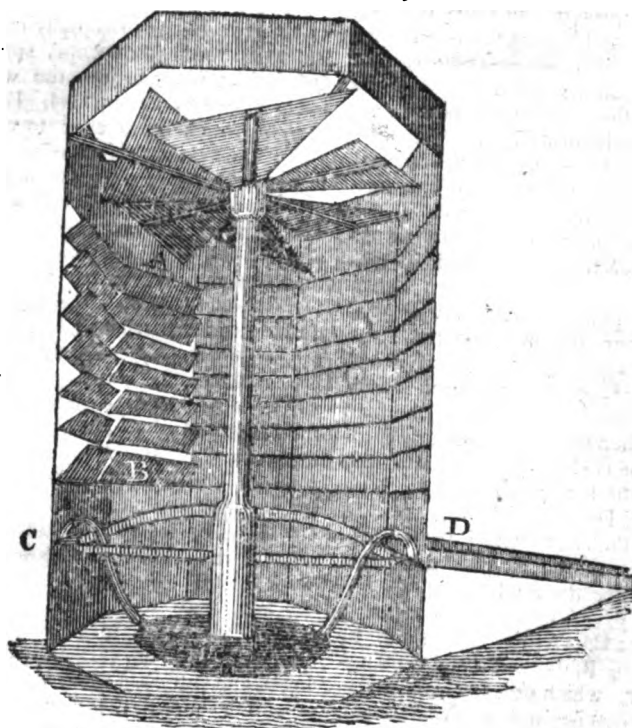
y, z; *y, z*; *y, z*; are water-pipes, each being one inch in diameter.

The pipe *b, c, c*, is always full from the stream *a, b*: the small cisterns *g, i, l*, and the large one *d*, are supposed to have been previously filled with water. The fluid may then may be admitted by turning the cock *o*, through the pipe *c, e*, into the large cistern *e*. This water, Dr. DARWIN remarks, will press the air, confined in the cistern *e*, up the air-pipe *w, x*, and will force the fluid out of the cisterns *g, i, l*, into those marked *h, k*, and C.—At the same time, by opening B, the water and condensed air, which previously existed in the large cistern *d*, and in the smaller ones marked *f, h, k*, will be discharged at B.—After a short time, the water-balance, *q, r, s*, will turn the cocks, and exclude the water, while it opens the opposite ones: the cisterns, *f, h, k*, are emptied in their turns by the condensed air from the cistern, *d*, as the water progressively enters the latter from the pipe, *b, c*.

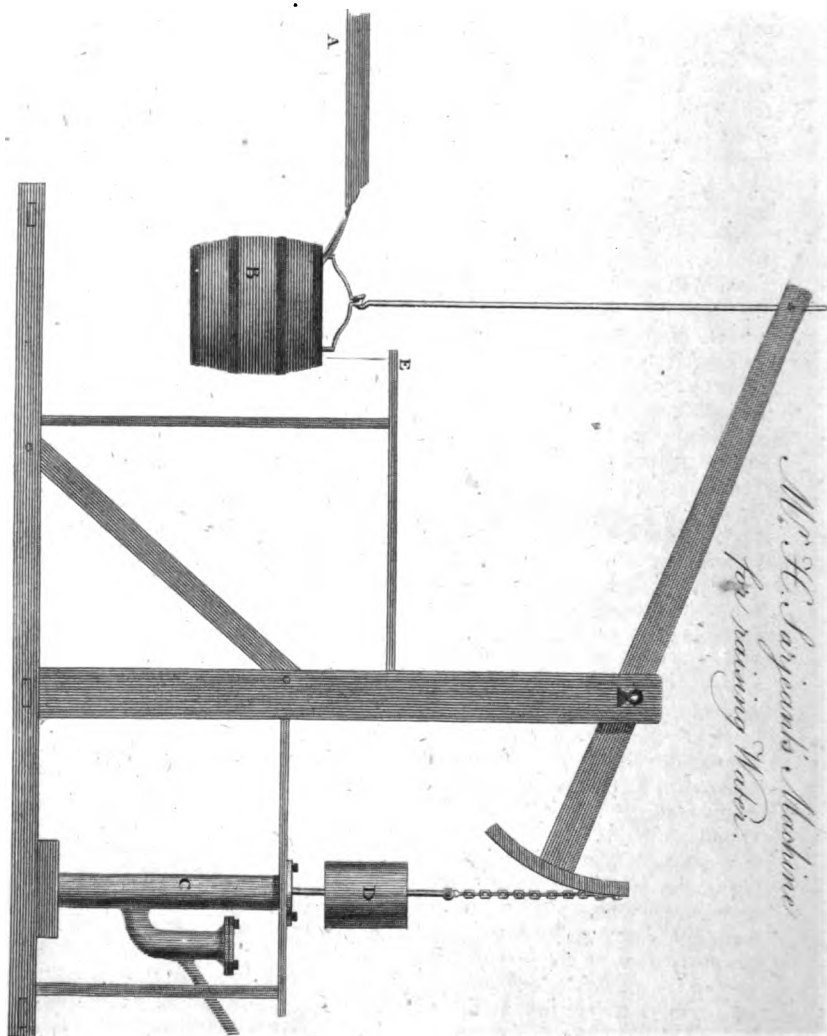
In the year 1783, an excellent engine was erected at Windsor, by the command of His MAJESTY, for the purpose of raising water from a deep well, to supply the wants of the Castle. It consists

simply of a grooved wheel, 3 feet in diameter, which is fixed on an axis that revolves horizontally over the well: an endless rope, sufficiently long to reach into the water, is passed over the wheel. Farther, a winch is attached to one end of the axis, by means of which it may be turned; and, on its opposite extremity, there is another wheel, weighted with lead, that acts as a fly, and serves to increase the velocity. When the wheel is turned, every part of the rope is drawn through the water, and ascends to the top, carrying with it a considerable quantity of that fluid: thus, by the pressure of the rope on the wheel, during its revolution, the water is discharged into a cistern placed for its reception.—This expedient was suggested by a sagacious mariner; and so remarkable is the facility with which the whole may be worked, that, though the well is nearly 200 feet in depth, the machine may be turned by one hand, and sufficient water be raised to fill a pipe; the diameter of which is equal to that of the rope.

In those situations, where it is an object of some importance to raise water to the height of a few feet, by the power of the wind, for the purpose of *draining morasses*, or of *watering lands* on a higher level; we conceive the *horizontal wind-mill*, with a *centrifugal pump*, to be a most useful machine: we have therefore annexed a representation of it, similar to that given by Dr. DARWIN, in the work above quoted.



*W. H. Jay's Patent
for Raising Water.*



The machine here delineated, consists of a windmill-sail, which is placed in an horizontal direction, similar to that of a smoke-jack, and is surrounded by an octagon tower. The diverging rays of such tower, *a, b, a, b*, if on a small scale, may be made of deals two inches in thickness; but, on a large plan, they should be constructed of brick-work. These upright pillars are connected by means of oblique boards, represented at *A, B*, which are placed *horizontally* from pillar to pillar, with respect to their *length*; and at an angle of 45 degrees, with regard to their *breadth*; so as to form a complete octagon, including the horizontal windmill-sail near the top:—as the wind strikes against any of such boards, from whatever quarter, it is bent upwards, and then acts upon the horizontal wind-sail. Farther, these boards may either be fixed in their respective situations; or be made to turn upon an axis a little beneath their centres of gravity, so as to close themselves on that side of the octagon tower, which is most distant from the wind.

Below the shaft of the wind-sail, a centrifugal pump is fixed, with two arms, as represented at *C, D*. It consists, simply, of an erect, bored trunk, or of a leaden cylinder, furnished with two opposite arms, having a valve at the bottom; which is so constructed as to prevent the return of the water; and another valve at the extremity of each arm, for excluding the access of air above the current of the water, while the latter flows out.

c, c, c, a circular trough for the reception of the streams from *C* and *D*, to convey them to those situations where the water may be required.

In December, 1783, a patent was granted to Mr. JOSEPH BRAMAN, for his invention of a water-cock upon a new construction. His privilege is now expired; but, as the principle on which he proceeds could be explained only by the aid of an engraving, we refer the reader to the 1st vol. of the "*Reper-tory of Arts*," &c.

Another patent was obtained, in January, 1791, by Mr. JOSEPH BROOKS, for his invention of a buoyant machine, calculated to raise water from a lower to a higher level, without the aid either of fire or of wind, and without taking any water from the uppermost level:—the curious reader will find a particular description of this contrivance, in the 7th vol. of the work above quoted.

In the year 1801, the Society for the Encouragement of Arts, &c. adjudged their silver medal to Mr. H. SARJEANT, of Whitehaven, Cumberland, for a *Machine for raising Water*, of which we have given an engraving.

This engine was erected at Irton-Hall, which is situated on an ascent of 60 or 61 feet perpendicular height: at the foot of this elevation, about 140 yards distant from the offices, there runs a small stream of water; and, in order to procure a constant supply of that necessary fluid, the object was to raise such stream to the house, for culinary and domestic uses. With this view, a dam was formed at a short distance above the current, so as to cause a fall of about four feet: the water was then conducted through a wooden trough, into which a piece of leaden pipe, two inches in diameter, was inserted, and part of which is delineated at *A*.

The

The stream of this pipe is directed in such a manner as to run into the bucket B, when the latter is elevated; but, as soon as it begins to descend, the stream passes over it, and flows progressively to supply the wooden trough or well, at the foot of which stands the forcing-pump C, being three inches in diameter.

D, is an iron cylinder, attached to the pump-rod, which passes through it: such cylinder is filled with lead, and weighs about 240lbs. This power works the pump, and forces the water to ascend to the house, through a pipe, one inch in diameter, and which is 420 feet in length.

At E, is fixed a cord, which, when the bucket approaches to within four or five inches of its lowest projection, extends, and opens a valve in the bottom of the vessel, through which the water is discharged.

The machine, here described, had at the time of Mr. SARJEANT'S communication to the Society above mentioned, been six months in use, and fully answered the purpose for which it was designed.—The artisans employed were a plumber, blacksmith, and carpenter: the whole expence, exclusive of the pump and pipes, did not exceed 5l.

The latest contrivance, within our knowledge, for facilitating the motion of machinery, is the *undershot water-wheel*, invented by the late Mr. BESANT, of Brompton; on whose widow, the Society for the Encouragement of Arts, &c. in 1801, conferred a reward of ten guineas: and, as it promises to be of great service in many situations, we have given a representation of it, in Plate II, for the Supplement.

Description of the late Mr. BESANT'S Undershot Water-wheel.

Fig. 1, a.—A, represents the body of the water-wheel, which is hollow, in the form of a drum, and is so constructed, as to resist the admission of water.

B, is the axis on which the wheel turns.

C, The *float-boards*, placed on the periphery of the wheel, each of which is firmly fixed to its rim, and to the body of the drum, in an oblique direction.

D, is the reservoir, that contains the water.

E, the pen-stock, for regulating the quantity of water, which runs to the wheel.

F, represents the current, that has passed such wheel.

Fig. 1, b, is a front view of the water-wheel, exhibiting the oblique direction, in which the float-boards C, are placed on the face of the wheel.

In the common water-wheels, more than half the quantity of that fluid passes from the gate through the wheel, without affording it any assistance: the action of the floats is resisted by the incumbent atmosphere, at the moment when these leave the surface of the *tail-water*; and, as a similar proportion of water with that which passed between the floats at the *head*, necessarily flows between them at the *tail*, the motion of the wheel is greatly impeded. On the contrary, by Mr. BESANT'S contrivance, no water can pass, excepting that which acts with all its force on the extremity of the wheel: and, as the floats emerge from the water, in an oblique direction, the weight of the atmosphere is thus prevented from taking any effect.

Although

Although his new wheel is considerably heavier than those constructed on the old plan, yet it revolves more easily on its axis; the water having a tendency to float it. Lastly, repeated experiments have proved Mr. BESANT's wheel to be so decidedly superior, that, when working in deep *tail-water*, it will carry weights in the proportion of three to one; on which account it will be particularly serviceable to tide-mills.

The extensive utility of water, for irrigating land; imparting motion to machinery; and for cold or tepid bathing, &c. is too well known to require farther explanation: we shall, therefore, confine our attention to an account of its properties when taken *internally*; and conclude with stating the most approved methods of preserving this salutary fluid, during long voyages; and of recovering its purity, when it has casually become corrupted or putrid.

As a constant beverage with meals, water is certainly preferable to any other liquid: nor has any case been recorded, in which the daily use of this harmless fluid has been productive of detrimental effects. Its relative salubrity, however, depends on the peculiar properties which it possesses; on the various animal, vegetable, or mineral particles, with which it may be impregnated, and the places whence it is procured. Thus, the water from SPRINGS, being conveyed and filtered through different layers of stone, sand, &c. before it arrives at the surface of the earth, is much purer than most other waters. The transparency of that obtained from *wells*, varies according to the strata of earth through which it rises; but the most wholesome fluid is

derived from sandy soils, where it has undergone a perfect filtration. The water of lakes and ponds, in general, has similar properties with that of rivers (see vol. iii. p. 498); but, being less agitated, it acquires a greater degree of impurity, and is consequently unfit for culinary purposes; though, on account of its softness, it may be advantageously employed in washing linen.—*Rain-water* collected in the vicinity of towns, of marshes, or of mines, especially during the summer, is likewise impure: it ought, therefore, to be used solely for cleaning houses, or linen, and watering gardens. The fluid, obtained by dissolving *snow*, is somewhat purer; and *hail-water* has still fewer extraneous particles, in consequence of its congealing in the air; so that it cannot, during its descent, combine with noxious ingredients.

As the health of mankind materially depends on the wholesomeness of the water which is introduced into the human body, by food and drink, different expedients have been devised, for preserving it in a state of purity, especially on long voyages. Hence, it has been recommended to add a small quantity of lime to every cask of water. Dr. BUTLER (in his Essay quoted p. 44 of the present volume), advises 4 oz. of fine, clear pearl-ash to be dissolved in 100 gallons of fresh water, and the cask to be closed in the usual manner. The proportion of the pearl-ash may be increased or diminished, according to circumstances. As an instance of its efficacy, Dr. B. relates, that he put 1 oz. of such alkali into a cask containing 25 gallons of Thames-water, and suffered it to stand for upwards of a year and a half,

half, opening it once in 4 months ; when he found it perfectly sweet. He adds, that he afterwards used some of this preserved fluid for boiling PEASE and BURGEOO ; that it made the former as soft, and answered the different culinary purposes as well, as water newly drawn from rivers.

In the first volume of the "*Rapport General des Travaux de la Société Philomatique de Paris*," we meet with a Memoir by M. VAUQUELIN, on several means of preserving water, on long voyages.—With this view, the inside of the casks was washed with lime-water, which changed into a calcareous carbonate, and thus effectually prevented putrefaction. The same desirable object may be attained, by adding a small portion of vitriolic acid and of alkali, to every cask ; which will preserve the water in a pure and salubrious state, for at least 12 months. Charcoal has also proved to be eminently adapted to such purpose : the most advantageous mode of employing this substance, is that of *charring* the inner surface of the staves, previously to constructing the casks.

The latest method of preserving fresh water in a sweet state, at a great distance from land, is that communicated to the Society for the Encouragement of Arts, &c. in 1800, by SAMUEL BENTHAM, Esq. and for which he was presented with their gold medal. It consists simply in stowing water in wooden cases or *tanks*, lined with metallic plates, known under the name of *tinned copper-sheets* ; the joinings of such cases being carefully soldered, so that the water cannot find the least access to the wood. These tanks may be manufactured of any shape adapt-

ed to the hold of the ship, and thus contain any quantity of water ; so that considerable *stowage-room* may be saved on board of vessels, which is at present occupied by the casks.—In justice to Mr. BENTHAM we add, that two tanks of water thus preserved, were submitted to the examination of the Society ; and, though they had been *three years and a half at sea*, the fluid was perfectly sweet, wholesome, and fit for any culinary purpose.

On the other hand, if water has become *putrid*, it may be divested of its pernicious properties, by the process recommended, vol. i. p. 37 ; by boiling, or by distillation ; and by filtering it through the machines delineated and described in the article FILTRATION ; or through Mr. COLLIER's patent vessels for-purifying oil and other liquids ; a specification of which is given in the 10th vol. of the "*Repertory of Arts*," &c. and illustrated with a Plate.

In October, 1790, a patent was granted to Mrs. JOHANNA HEMPEL, for her invention of a composition ; which, on being formed into vessels, is said to possess the advantage of filtering water or other liquids, in a cheaper, more easy, and expeditious manner, than could be effected by any other preparation. The proportions of the materials, employed for this purpose, vary according to the size of the basons, or jars to be manufactured. Thus, for vessels intended to contain a quantity of water not exceeding one gallon, *four* parts of tobacco-pipe clay must be incorporated with *nine* parts of coarse sea, river, drift, or pit-sand, and worked on a potter's-wheel into any form, as fancy or convenience may direct. But, as the composition thus prepared, is apt

spt to crack in the fire, if it be wrought into basons, &c. of a larger capacity, the patentee recommends such vessels to be manufactured of equal parts of the clay and sand above mentioned. She farther states other proportions of clay, loam, &c. which may be employed according to the size of the bason or other vessel; and for a specification of which, the reader will consult the 2d vol. of the "*Repository of Arts*," &c.

To conclude this important subject, we shall state a few other simple methods of restoring putrid water to its original purity.

Dr. LIND directs a small cask, open at both ends, to be placed within a larger vessel, the head of which has been taken out: clean sand and gravel are then to be put into both vessels, so that the level of the sand in the inner cask be higher than the bed in the intermediate space between the two barrels; sufficient room being left for pouring in the water. A cock should now be placed in the external cask, above the gravel or sand; and somewhat lower than the surface of the materials in the interior vessel. The water is poured in, at the top of the cask last mentioned; it sinks through the mass of sand; and, after passing through the bed in the intervening space, it ascends, so that it may be drawn off perfectly sweet and clear:—when the surface of the gravel becomes loaded with impurities, it should be removed, and fresh sand be substituted.

According to the experiments of M. LOWITZ, $1\frac{1}{2}$ oz. of pulverized charcoal, and 24 drops of the sulphuric or vitriolic acid, are sufficient to purify $3\frac{1}{2}$ pints of putrid or corrupted water, without com-

municating to it any perceptible acidity: he directs the oil of vitriol to be first mixed with the water; after which the charcoal must be added; but, if the sulphuric acid be omitted, it will be requisite to employ a triple portion, or $4\frac{1}{2}$ oz. of charcoal.—When spring-water has acquired an unpleasant, hepatic flavour, it may be greatly improved by filtering it through a bag half filled with powdered charcoal. This substance may again be dried, and pulverized, when it will answer the same purpose a second time; and, if it lose its purifying effect, by repeated use, such property may be recovered, by making it red-hot in a close vessel.—Prof. HUFELAND recommends carbon to be reduced to fine powder; a spoonful of which must be mixed with a pint of stagnant, corrupted, or bad water: the whole should be well stirred, then suffered to stand for a few minutes, and afterwards passed slowly through filtering paper. He remarks, that the same powder will serve repeatedly; and, after drying it, he advises travellers to keep it closely corked in a bottle; because the influence of the air would render it useless.—Lastly, if either of the expedients already described, cannot be conveniently adopted, the putrid tendency of water may be corrected, by mixing vinegar, or acid of lemons, with the corrupted fluid; and, in case any quantity of the latter should have been accidentally swallowed, its injurious effects may be obviated, by immediately taking small, but repeated, draughts of vinegar.

WATER, IN THE HEAD, or *Hydrocephalus*, is a collection of serum, either between the bones and common integuments, when it

is

is called *external*; or between the bones and membranes of the brain, when it is termed *internal*. As the former mostly affects infants, and generally proves fatal, we shall treat only of the latter species, which, if timely attended to, may frequently be removed.

Symptoms.—The head of the patient is enlarged, irregularly shaped, and almost quadrangular; the sutures are open; the bones thin and painful; the eyes appear starting from their sockets, and cannot bear the light;—the countenance is pale; the skin delicate; the respiration difficult; with alternate flushings in the face, uneasiness, and dullness: in short, all the common signs of rickets are discernible; few of such hapless persons attaining a considerable age; and being, in general, remarkably stupid.

Causes.—Mal-conformation of the head, which is frequently occasioned by the incautious use of emetics, opiates, and other active medicines, both during gestation, and when indiscriminately given to infants; farther, excessive evacuations which occasion debility; over-feeding, as well as improper food; spirituous and fermented liquors, especially punch; and even strong tea; lastly, violent exercise; falls, and bruises on the head.

Cure.—The first object will be to promote the resorption of water, by means of sudorifics, and diuretics; which are to be succeeded by tonics. Next, cold fomentations and lotions, made by infusions of malt, ought to be applied, together with frictions; and afterwards an ointment prepared of 1 oz. of pulverized fox-glove, and 1 dram of calomel; a small portion of which should be rubbed in

every day.—Prof. STARK has successfully employed the valerian, with rob of juniper and elder; antimonial wine; and completed the cure with the Peruvian bark, quassia, and dandelion.—Blisters, setons and other artificial discharges, have occasionally been found useful; and the experienced Dr. ROWLEY recommends an ointment of *savin* to be applied to the crown of the head, for three or four weeks.

Where this formidable malady arises from *suppressed perspiration*, the head should be shaved, rubbed with a brush, and afterwards covered with a blister, or, at least with flannel.—Cupping has also frequently proved of service. Independently of external remedies, however, the patient ought to take such diuretics, and sudorifics, as are conformable to the nature of his complaint; which always requires medical attendance.

WATER-AGRIMONY. See AGRIMONY, the HEMP.

WATER-ALOE, or FRESH-WATER SOLDIER, *Zostera Aloiodes*, L. an indigenous perennial, growing in fen-ditches and slow-streams; flowering in the months of June and July.—This plant affords nourishment to a great variety of insects, some of which pursue it even to the bottom of the water.—It is eaten by hogs, but refused by goats.—From its ashes, an excellent alkaline salt may be obtained, by filtrating and evaporating the ley.—BÖHMER observes, that such salt is not only well adapted to the curing of beef and other meat, but also forms a valuable ingredient in the manufacture of glass; nay, that it is occasionally used in England as a substitute for pot-ash, in the process of making soap.

WATER-AVENS, See AVENS. WATER-

WATER-CALTROPS, or *Trapa natans*, L. a valuable exotic, originally from Asia, though likewise growing wild in the ponds and ditches of Germany: its fibrous roots strike deeply into the soil; and, when the stalk attains the surface of the water, its extremity presents a pyramidal bud, which, on the access of air, unfolds and spreads the convoluted leaves.—The plant flowers in June or July; and produces its excellent fruit in August or September.

Although the water-caltrops be, on the Continent, considered as a troublesome weed in lakes and fish-ponds, yet we are persuaded that it may, with great advantage, be introduced into many marshy situations, especially those destitute of fish; to which animals it is certainly pernicious. The *kernel* contained in the nut of this aquatic vegetable, may be eaten, either raw or boiled: when dried and reduced to flour, it affords one of the most nutritive ingredients in broths, puddings, and other culinary dishes. **PLINY** informs us (book xxii. chap. 12.) that the ancient Thracians converted this fruit into *bread*; and fed their horses with the leaves.—Formerly, the black roots of this luxuriant plant were reputed to be poisonous; but it has lately been ascertained, that the Japanese boil and eat them, generally, in their daily soups.

WATER-CAN. See **Yellow Water-Lily**.

WATER-CLOSET, an useful contrivance, the purpose of which requires no explanation.

In December, 1789, a patent was granted to **Mr. THOMAS ROWNTREE**, for an improvement in the construction of water-closets; by arranging the several parts, in such

manner that the whole apparatus may be moved at once, without being taken to pieces. His machine may, likewise, be adapted to the apartments of the sick, so as not to occupy a larger space, or to be more cumbersome, than a common night-chair; while the fœtor is effectually suppressed by means of certain tubes. A more diffuse account of **Mr. ROWNTREE's** principle, occurs in the 11th vol. of the "*Repertory of Arts*," &c.

Another patent was obtained by **Mr. THOMAS BINNS**, for his invention of a machine applicable to privies and water-closets; from the peculiar construction of which, the bason is not only cleansed by the introduction of water, but a sufficient quantity of that fluid is left in the vessel, without the assistance of any person. This machinery, however, having been found too bulky, **Mr. BINNS**, procured a second patent in November, 1800, for his contrivance of an improved apparatus, answering the several purposes of a water-closet, bider, and easy chair; which are comprized in one-third part of the room occupied by the common portable water-closets. From its lightness, and small size, the new machine is well calculated for travelling, for camps, and for ships.—In the 7th and 15th vols. of the work above quoted, the inquisitive reader will meet with full specifications of both patents, which are farther illustrated with engravings.

WATER-COLOURS. See **COLOUR-MAKING**, vol. ii. p. 34.

WATER-COWBANE, See **Hemlock**, the long-leaved Water.

WATER-CRESS. See **CRESS**.

WATER-DOCK. See **DOCK**.

WATER-ELDER. See **Common GUelder-ROSE**.

WATER-

WATER-GLADIOLE, or **CARDINAL FLOWER**, *Lobelia Dortmanna*, L. is an indigenous perennial, growing in mountainous lakes, especially in Cumberland, Westmoreland, Wales, and Scotland; where its beautiful pale, blue flowers appear in the months of July and August.—The whole of this plant, which grows beneath the surface of the water, abounds with a milky juice. It may be easily propagated by seeds, by offsets, or by cutting; and, vegetating with great luxuriance, it deserves to be raised in moist or marshy situations.

WATER-HEMLOCK. See **HEMLOCK**, the Water.

WATER-HEMP. See **AGRIMONY**, the Hemp.

WATER-LILY. See **LILY**, the Water.

WATER-MOSS. See **MOSS**.

WATER-PARSNIP. See **PARSNIP**, the Water.

WATER-PEPPER, **LAKEWEED**, or **BITING SNAKEWEED**, *Polygonum hydropiper*, L. an indigenous plant, growing on the sides of rivulets, lakes, and ditches; flowering from July to September.—The whole of this vegetable possesses a very acrid taste: its fresh leaves have, nevertheless, with advantage been applied externally, for cleansing old fistulous ulcers, and consuming fungous flesh. An infusion of these leaves is said to promote the urinary discharge in phlegmatic habits; and has frequently been of service in scorbutic complaints. When mixed with soft soap, the ashes of the lake-weed are used, as a nostrum, for dissolving the stone in the bladder.—According to Dr. **WITHERING**, the acrimony of this herb rises on distillation; and 2 or 3

half pints of the water, drunk daily, have been found very effectual in some nephritic cases. It imparts a yellow colour to wool. The Water-Pepper is refused by every species of cattle.—See also **BLISTER**.

WATER-PROOF, a term applied to those stuffs, which have undergone certain chemical or mechanical processes, and thus become impermeable to moisture.

Having already stated, under the heads of **BOOT** and **LEATHER**, the most proper means of rendering those articles water-proof, we shall at present confine our attention to the expedients that have been devised for making linen and woollen cloth, paper, &c. capable of resisting humidity.

In July, 1797, a patent was granted to Mr. **HENRY JOHNSON**, for his invention of a vegetable liquid, the design of which is to bleach and cleanse woollen, or other stuffs; to prepare them for the reception of a certain compound, calculated to render them not only water-proof, but also more durable and elastic, when manufactured into articles of dress, which he terms *Hydrolaines*.—In order to obtain first the vegetable liquid, the patentee directs horse-chesnuts, or the rinds and kernels of oranges, that are usually thrown away, or the offals and gall of fish, to be boiled for four or five hours; after which they are suffered to cool and settle, for a few days: in cases where these substances cannot be easily procured, 8 quarts of water may be added to every pound of British barilla, and the mixture allowed to dissolve for two or three days. Next, one pint of pear-ashes, or of purified kelp, or wood-ashes, must be added to either of these preparations; and, after the whole

whole has been duly mixed, for 24 hours, a certain portion of *Ryegate-lime* is slacked in the compound, for the purpose of imparting the *caloric*; of precipitating the carbon of the ashes; and moderating the causticity of the liquor. Now 40 quarts of water are to be boiled with one quart of fish, linseed, or other oil; adding to this decoction half an ounce of the salt of sorrel, or of sugar, or of the rectified salt of tartar; the object of which is to combine the oil with the water. Lastly, after this composition has stood for 12 hours, it is to be strained, and 1 quart of such oily water to be mixed with every 12 quarts of the liquid, prepared in the manner above described: when the mixture is completely settled, it forms, what the patentee calls, a *blanching lixivium*.

The linen, woollen, cotton, or silk stuffs, hats, or leather, are to be immersed in such lixivium, and extended on a frame. Caoutchouc is then to be dissolved in spirit of turpentine (the smell of which may be dissipated by the addition of equal parts of oil of wormwood and spirit of wine), so as to form a varnish: this liquor must now be applied to the wrong side of the stuffs that are to be prepared, by means of a solid piece of India rubber; and minute shreds of cloth, wool, silk, or worsted, should be sifted over the varnish: in the course of 2 or 3 days, it will be perfectly dry; and the shreds, by their adhesion to the dissolved caoutchouc, will form a lining impermeable to water.

In 1801, another patent was granted to Messrs. ACKERMANN, SUARDY, and Co. for their invention of a process, by which every species of cloth may be rendered

water-proof. — As the patentees have not thought proper to publish the particulars of their process (though such concealment is contrary to the nature of *Letters Patent*), we shall briefly remark from our own observation, that their method appears to be a simple impregnation of cloth with wax previously dissolved, and incorporated with water, by the addition of pure vegetable alkali, or pot-ash. This being the cheapest and most expeditious mode of reducing wax to a fluid state, we are farther inclined to believe that our conjecture is well founded; because all the woollen cloth prepared in the manufactory of Messrs. ACKERMANN, SUARDY, and Co. *feels* somewhat harder than such as has not been *waxed*: for the same reason, it will stand a shower of rain only so long as it has not been subject to friction; and we understand from those who have worn *patent water-proof coats*, that in the sleeves particularly, they are very apt to admit moisture through the different folds. Nevertheless, their process is entitled to attention; and it deserves to be adopted principally in those cases, where the manufacture is not liable to be impaired by friction; such as coverings for tents; for horses exposed to the rain when at rest; and especially for paper in which gunpowder, or steel and other goods, are to be packed.

The following simple process is stated to be that employed by the Chinese, for rendering cloth *water-proof*: Let an ounce of white wax be dissolved in one quart of spirit of turpentine; the cloth be immersed in the solution, and then suspended in the air, till it be perfectly dry. By this method, the

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most open muslin, as well as the strongest cloths, may be rendered impenetrable to the heaviest showers; nor will such composition fill up the interstices of the finest lawn; or in the least degree affect the most brilliant colours.

WATER-RADISH. See **Radish-Water-CRESS.**

WATER-SOCKS. See **White Water-LILY.**

WATER-TREFOIL. See **Trefoil-BUCKBEAN.**

WATER-ZIZANY. See **ZIZANY.**

WATERING-OF-LAND. See **IRRIGATION.**

WAX, a solid concrete, abounding in the vegetable kingdom, whence it is collected by bees.—In the article **BEES-WAX**, we have stated the manner in which this substance is obtained, and likewise the uses to which it is applied: at present, therefore, we shall direct our attention to the *blanching* or whitening of wax, and to the process by which it may be *artificially* extracted from vegetables.

With a view to bleach *wax*, it is cut in small pieces, melted, and poured into cold water, where it granulates. In this state, it is exposed to the sun and air; melted, and granulated repeatedly; then submitted to the influence of the sun, air, and dew, in the interval between each liquefaction. When the wax is perfectly blanched, it is dissolved for the last time, and cast into flat moulds, in which it is again exposed to the air, for one or two days, in order to render it more transparent.

Wax may be extracted from the leaves and petals of numerous vegetables (see the *General Index of Reference*); by collecting, bruising, and dissolving them, first in water, and then in alcohol, or spirit of

wine, till every other ingredient that is soluble in these fluids, be completely separated. The residuum is now mixed with 6 times its weight of a solution of pure ammonia: when it has been thoroughly macerated, the liquor must be decanted; filtered; and, while it is briskly stirred, a sufficient portion of sulphuric acid must be gradually added, to super-saturate the alkali. Thus, the wax will be precipitated in the form of a yellow powder; which, on being carefully washed with simple water, and melted over a slow fire, possesses all the properties of bees-wax.

WAY-BENNET. See **Wall-BARLEY.**

WAY-BREAD. See **Greater PLANTAIN.**

WAYFARING-TREE. See **Mealy GUELDER-ROSE.**

WEANING, is the act of gradually removing an infant from the breast, and habituating it to take common food.

Weaning requires to be conducted with some precaution: it will, therefore, be advisable to inure children to take proper aliment out of a boat or tea-cup, at the age of 3 or 4 months; so that they may not too suddenly, and sensibly, feel the loss of the breast. To facilitate this change, the human milk should be occasionally withheld from them, while the mother or nurse may partake of such aliment as tends to diminish the secretion of that salutary fluid.

Children committed to the care of wet-nurses, ought, in prudence, not to be allowed to suck, after the age of 6 or 8 months; as their infantine faculties then begin to unfold; and they are apt to acquire an undue degree of affection for their foster-mothers. On the other hand,

hand, they should not be precipitately removed from the breast; because this tender part is thus liable to become inflamed, and ulcerated; so that scirrhus tumors, and even cancers, may arise from such conduct.

Lastly, the diet of children, when weaned, ought to be light, and adapted to the strength of their stomach, and constitution: hence, all coarse food must be strictly avoided, during the first and second year of life; for such mistaken indulgence often lays the foundation of diseases originating from a bad digestion; of scrophula, or other glandular affections; and even of eventual consumption, at the age of puberty.

WEASEL, the **COMMON**, or *Mustella vulgaris*, L. a diminutive animal of prey, frequenting barns, granaries, and out-houses: its body seldom exceeds 6 or 7 inches in length, and the legs are remarkably short.

Weasels propagate in the summer, when they retire to low grounds, near mills; and either conceal themselves among brush-wood, or in old willows; the female producing from 6 to 8 young ones, that are blind at first, but soon acquire their sight, and are enabled to join their parents in nocturnal depredations.—Like the **POLECAT**, and **FERRET**, weasels emit a very offensive odour; and, though of a diminutive size, they are formidable enemies to many larger animals. Among rabbits, poultry, and young birds, weasels commit extensive devastations, and they likewise devour incalculable numbers of eggs. But to counterbalance, in some measure, these depredations, they also destroy

many noxious animals, such as rats, mice, and moles.

The following method of entrapping weasels has often been practised with success: It consists of a wooden box, or hutch, resembling the kennel usually provided for a house-dog; but it is divided in the middle by an open wire-partition, extending from one end to the other; and being again separated into two cages, one of which may be baited with a tame rabbit, and the other with a live fowl; while the remainder of the hutch may be formed into a falling box, for securing the depredator. This trap may be placed in coppices, and hedge-rows.—See also **MARTIN**.

WEASEL-SNOUT, **YELLOW ARCHANGEL**, or **YELLOW DEAD-NETTLE**, *Galeobdolon luteum*, L. is an indigenous perennial, growing in woods, shady places, and moist hedges; blowing in the month of May. The flowers of this plant afford to bees an abundant supply of honey.

WEATHER, a term denoting the state of the atmosphere, with respect to **HEAT**, **COLD**, **HAIL**, **RAIN**, **SNOW**, &c.

Having already discussed, in the course of this work, the phenomena of the meteors above mentioned, we shall at present communicate a few simple rules, which may serve to prognosticate the weather, or to ascertain its future variations, with tolerable accuracy. For this purpose, **MR. KIRWAN** ("Transactions of the Royal Irish Academy," vol. v.) has laid down the following plan, from observations that had been made in England, during a period of 112 years; namely, from 1677 to 1789.

1. When no storm has either preceded

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preceded or followed the vernal equinox, the succeeding summer is in general dry, or at least so, five times out of six.

2. If a storm happen from an easterly point, on the 19th, 20th, or 21st day of May, the ensuing summer will, four times in five, be also dry.—The same event generally takes place, if a storm arise on the 25th, 26th, or 27th days of March, in any point of the compass.

3. Should there be a storm, either at south-west, or at west-south-west, on the 19th, 20th, 21st, or 22d of March, the following summer is *wet*, five times out of six.

In England, if the winters and springs be dry, they are mostly *cold*; but, if moist, they are generally *warm*: on the contrary, dry summers, and autumns, are usually *hot*; as moist summers are *cold*. Thus, if the humidity or dryness of a particular season be determined, a tolerably correct idea may be formed respecting its temperature.—To these indications may be added the following maxims; which, being the result of observations made by accurate inquirers, may so far be depended upon, as they will afford a criterion of the mildness, or severity, and of the dryness or moisture, of future seasons.

1. A moist autumn, succeeded by a mild winter, is generally followed by a dry and cold spring; in consequence of which, vegetation is greatly retarded.

2. Should the summer be uncommonly wet, the succeeding winter will be severe; because the heat or warmth of the earth will be carried off by such unusual evaporation. Farther, wet sum-

mers are mostly attended with an increased quantity of fruit on the white-thorn, and dog-rose; nay, the uncommon fruitfulness of these shrubs is considered as the presage of an intensely cold winter.

3. A severe winter is always indicated by the appearance of cranes and other birds of passage, at an early period in autumn; because they never migrate southwards, till the cold season has commenced in the northern regions.

4. If frequent showers fall in the month of September, it seldom rains in May; and the reverse.

5. On the other hand, when the wind often blows from the south-west, during either summer or autumn; when the air is unusually cold for those seasons, both to our sensations, and by the thermometer; at the same time, the mercury being low in the barometer;—under these conditions, a profuse fall of rain may be expected.

6. Great storms, rains, or other violent commotions of the clouds, produce a kind of crisis in the atmosphere; so that they are attended with a regular succession, either of fine or of bad weather, for some months.

Lastly, an unproductive year mostly succeeds a rainy winter; as a rough and cold autumn prognosticates a severe winter.—See also the article CLIMATE.

WEATHER-GLASS, or STORM-GLASS.—An ingenious contrivance of this nature has lately been announced by WIGLEB, in Germany; and the invention of it is likewise claimed by Mr. FRANCIS ANONE, of High Holborn: it consists of a glass tube, containing a liquor that holds in solution a compound substance, the

transparency, or turbid appearance of which, indicates the changes in the atmosphere. Thus, if the weather promise to be *fine*, the solid matter of the composition will settle at the bottom of the tube, while the liquid is pellucid; but, previously to a change for rain, the compound will gradually rise; the fluid will continue transparent; and small stars will be observed moving or floating about the glass.

Twenty-four hours before a storm, or very high wind, the substance will be partly on the surface of the liquid, apparently in the form of a leaf; the fluid, in such case, will be very turbid, and in a state resembling fermentation.

During the winter, small stars being in motion, the composition is remarkably white, and somewhat higher than usual, particularly when white frosts, or snow prevail. On the contrary, in the summer, if the weather be hot and serene, the substance subsides closely to the bottom of the glass tube.

Lastly, it may be ascertained from what point of the compass the wind blows, by observing that the solid particles adhere more closely to the bottom, on the side opposite to that, from which the tempest happens to arise.—This instrument has been satisfactorily employed both at sea and on shore: being small, portable, and tolerably exact; it may often serve as a substitute for the more bulky and expensive contrivances in common use.—See also BAROMETER.

WEAVING is the art of working a web of linen, silk, wool, or any other material, by means of looms.

Having, in the article CLOTH, given an outline of the manner in which weaving is performed, we

shall at present notice two improvements that have lately been introduced in this important branch of our staple-manufacture.

The first is, Mr. ROBERT MILLER's method of weaving all kinds of linen, woollen, or other stuffs, by means of looms worked by water, steam-engines, or horses; for which he obtained a patent in June, 1796.—Our limits not admitting of diffuse accounts, which would also require the aid of engravings, we refer the reader to the 8th vol. of the "*Repertory of Arts*," &c. where the specification is illustrated with two plates.

In the year 1800, the Society for the Encouragement of Arts, &c. conferred a bounty of 15 guineas on Mr. THOMAS CLULOW, for his invention of a loom, designed to weave *figured* ribbons. The great advantage attending the use of this machine is, not only a considerable saving of time, but ribbons may thus be woven with greater neatness, and beauty, than by the common looms; the work being necessarily stopped in the latter, while the figure is formed by the hand; whereas, by Mr. C.'s contrivance, the *tire-cords*, or those which trace such outline, without retarding the progress of the work, are acted upon by straps affixed to the centre treddle.—A farther account of this useful improvement, will be found in the 18th vol. of the Society's "*Transactions*," &c. —See also the article LOOM.

WEED, a term applied to all rank, coarse vegetables, that grow spontaneously, to the detriment of other plants.

Weeds are usually divided into two classes, namely, *annual*, and *perennial*. With a view to eradicate the former, it will be advis-

able to plough them up, shortly before their seeds are formed, or at least previously to their attaining to a state of maturity.—The small seeds of weeds, that are separated in winnowing grain, ought to be carefully burnt; because, when thrown upon dung-hills, and afterwards spread on land among manure, they vegetate with increased luxuriance.

Perennial weeds are exterminated with the greatest difficulty; as they strike very deep root. The usual method of extirpating them, is that of bringing them to the surface by the plough; after which they are gathered by hand: but, as this mode is very expensive, it will be more advantageous to cut them half-through, about the middle of June, or when they are in full vigour: for the sudden interruption of their circulating sap causes that fluid to stagnate in the roots; in consequence of which the plant generally perishes: thus, such weeds may be collected by means of Mr. SANDILANDS' *Wreck-Harrow*, (see vol. ii. p. 432); then burnt, and strewed on the land by way of MANURE.—See also vol. iii. p. 159.

Weeds often abound in the beds of navigable canals and rivers. As their eradication, however, is tedious, and sometimes occasions considerable expence, M. DE BETANCOURT MOLINA, in 1796, presented to the Society for the Encouragement of Arts, &c. a model of a machine designed to mow or cut them, so that they may then be carried down with the stream; or, if the current be not sufficiently rapid for that purpose, they may be collected on the surface of the water, and employed as manure. For this contrivance, he was re-

warded with the premium of forty guineas; but, as a plain description would not convey an adequate idea of the principles on which it is constructed, we refer the reader to the 14th volume of the "*Transactions*" of that Society, where a complete account is inserted, and illustrated with an engraving.

WEVIL. See CORN-CHAFER.

WEIGH, or WAY, a species of provincial English weight, employed for cheese, wool, &c.: it contains 256 lbs. avoirdupois. A *weigh* of corn should comprise 40 bushels; that of barley or malt, amounts to 6 quarters; but in Essex, and some other counties, a *weigh* of cheese consists of 300 lbs.

WEIGHT, denotes a method of ascertaining the quantity of any solid or fluid body, by means of the balance, or otherwise.

Having already stated, in the articles AVOIRDUPOIS, TROY-WRIGHT, CLOVE, &c. the different weights used in England, we shall only remark, that various statutes have been enacted, with a view to regulate the uniformity of weights and measures; but the wisdom and accuracy of those laws have not yet produced the desired effect; and so prevalent is the force of habit, that the old weights are still employed in many parts of the kingdom, to the great detriment and confusion of commerce. Hence, ingenious mathematicians have proposed various schemes for introducing a more uniform scale in weights and measures; the principal of which are the following:

In the year 1779, the Society for the Encouragement of Arts, &c. conferred a bounty of 30 guineas on Mr. THOMAS HATTON, for his "*Attempt to find, by Approximation, an Universal Standard.*"—

Mr,

Mr. H.'s plan consists in applying a moveable point of suspension to one and the same pendulum, in order to produce the full effect of two pendulums, the difference of the length of which, is the intended measure. An abstract of Mr. HARRISON's memoir, will be found in the 1st vol. of the Society's Transactions. Several years having elapsed without his suggesting any farther improvement, Mr. WHITEHURST proposed, in 1787, "An attempt towards obtaining an invariable measure, length, and capacity, from the mensuration of time; independently of the mechanical operations, necessary to ascertain the true length of pendulums."—In short, his contrivance is founded on Mr. H.'s apparatus, in an improved state; and the inquisitive reader, who is desirous of farther information, will consult Mr. W.'s elaborate essay (4to. 5s. Bent); the title of which has before been specified.

Numerous abuses, relative to *weights and measures*, are also stated, with appropriate remedies, in the late Sir JOHN RIGGS MILLER's "*Speeches in the House of Commons, upon the Equalization of the Weights and Measures of Great Britain*," &c. (8vo. pp. 128, 2s. 6d. Debrett, 1790);—in the late SIR JAMES STUART's "*Plan for introducing an Uniformity in Weights and Measures, within the Limits of the British Empire*" (8vo. pp. 64, 1s. 6d. Stockdale, 1790);—and in Sir GEORGE SHUCKBURGH EVELYN's Memoir, inserted in the "*Philosophical Transactions of the Royal Society*," for 1798.—As, however,

a specification of their different plans, would be incompatible with our limits, we shall give our readers an account of the *new French weights and measures*; because they frequently occur in translations of works from that language.

The principal measure of length is the *metre*, which is equal to 39.404 English inches: it is multiplied by prefixing the Greek numeral adjectives to the word *metre*: thus, the *Decametre* signifies 10 metres; *Hectometre*, 8; *Kilometre*, 1000; and *Myriametre*, 10,000 metres. The measures below a metre, are named in a similar manner; the Latin numeral adjectives being substituted for those of the Greek: hence, a *decimetre* denotes the tenth part; *centimetre*, the hundredth part; and *millimetre*, the thousandth part of a metre.

The standard measure of capacity is denominated a *Litre*, which is equivalent to 61.1816 English cubic inches, or about 1, 5-7th of a pint, ale-measure, and 2, 1-10th of a pint, wine-measure. Its multiplication, and sub-multiplication, are performed in a similar manner.

The *Gramme* is adapted to weighing bodies, and is equal to 15.4457 English grains, Troy-weight. Its divisions, and sub-divisions, correspond with those of the metre.

The French *are* is employed for measuring the superficies of land, and is equal to 1076, 2-5ths square feet, or 119, 3-5th square yards, or about one-fortieth part of an acre. Lastly, the *Stere* is used in measuring wood for fuel: it is equal to 35.31467 cubic feet.

A Comparative Table of the Unities of the French Metres, Litres, and Grammes, with their corresponding English Inches, Gallons and Grains.

French Measures.	METRES in English Inches.	LITRES in English.			GRAMMES in English Grs. Troy.
		Cubic Inches.	Ale Gallons, of 282 inches.	Wine Gallons, of 231 inches.	
1	39.404	61.1816	0.21695	0.26485	15.4457
2	78.808	122.3632	0.43390	0.52970	30.8914
3	118.212	183.5448	0.65085	0.79455	46.3371
4	157.616	244.7264	0.86780	1.05940	61.7828
5	197.020	305.9080	1.08475	1.32425	77.2285
6	236.424	367.0896	1.30170	1.58910	92.6742
7	275.828	428.2712	1.51865	1.85395	108.1199
8	315.232	489.4528	1.73560	2.11880	123.5656
9	354.636	550.6344	1.95255	2.38365	139.0113
10	394.04	611.816	2.1695	2.6485	154.457
20	788.08	1223.632	4.3390	5.2970	308.914
30	1182.16	1835.448	6.5085	7.9455	463.371
40	1576.16	2447.264	8.6780	10.5940	617.828
50	1970.20	3059.080	10.8475	13.2425	772.285
60	2364.24	3670.896	13.0170	15.8910	926.742
70	2758.28	4282.712	15.1865	18.5395	1081.199
80	3152.32	4894.528	17.3560	21.1880	1235.656
90	3546.36	5506.344	19.5255	23.8365	1390.113
100	3940.4	6118.16	21.695	26.485	1544.57

From the table here given, the English weights and measures, corresponding with those used in France, may be easily ascertained, by multiplying the *hundreds*, and adding the tenths and units, as circumstances may direct; or, if the number be less than one hundred, by adding the units to the tens. After the number required is thus found, it may be reduced to English feet, or inches; to quarts or pints; to pounds, ounces, drams, or grains, by means of the common rules of arithmetic.

A more ample specification of these weight and measures is published in the 3d vol. of Mr. NICHOLSON'S "*Journal*;" and which is abstracted from a report published in 1799, at Paris, by authority of the French government.

In the year 1791, the Society for the Encouragement of Arts, &c. gave a bounty of 20 guineas to M. HANIN, of Paris, for his *weighing machine*; in which the weights of the principal countries of Europe, together with their relative differences, may be ascertained at one view;

view:—as a description of this contrivance would be unintelligible, without the aid of engravings, we refer the reader to the 9th vol. of the Society's "*Transactions*," &c. which contains a complete analysis of the subject, illustrated with two plates.

WELCH BISTORT. See BISTORT, the Small.

WELD. See DYER'S-WEED.

WELL, a cavity, dug in the ground, with a view to collect the water from the contiguous strata: it is generally of a circular form, and lined with brick or stone.

The following method of procuring water, in almost every situation, has lately been suggested by M. CADET DE VAUX.—He directs the soil to be perforated with a borer: a wooden pipe is then to be placed in the hole, and driven down with a mallet; after which the boring must be continued, in order that a pipe may be driven to a greater depth. As the auger becomes filled with earth, it ought to be drawn up, and emptied; so that, by the addition of fresh portions of the pipe, the boring is carried to a considerable extent under ground, and water is in most instances obtained. Wells, thus formed, are preferable to those dug in the usual manner; being less expensive, while the supply of water is more copious and certain. Indeed, it often happens, in the common practice of digging for wells, that the workmen are obliged to fix the windlass, in order to prevent the springs from gaining on them: by this practice, a small quantity of water is the necessary consequence, and it is apt to fail during dry summers. Hence, M. DE VAUX advises the earth to be perforated; a cylindrical pipe to be

inserted; and to search for that element at a greater depth, in the manner before suggested.—This method is stated to be very useful in camps, or fortresses; and, in case the fluid near the surface be neither sufficiently sweet, nor of a good quality, he supposes his expedient to be the best that can be adopted, for obtaining water of a purer kind, at a greater depth.—Farther, when wells have, in large towns, been rendered unfit or useless, in consequence of the ground having been tainted by privies, church-yards, &c. he very properly recommends such reservoirs to be emptied, and the bottom perforated in a similar manner, so as to reach the lower sheet of water; which, being thus contained within the cylindrical pipe, will rise in a pure state into the body of the pump fixed for this purpose.—For an account of the relative salubrity of *well-water*, the reader will revert to p. 299 of this volume.

If wells be disused for a considerable time, the water generally becomes foul; the ambient atmosphere is corrupted; and thus arise mephitic vapours which have often proved fatal to animal life. Hence it has been suggested, to employ a pair of smith's bellows, and a tube, according to the manner directed in the article VAPOUR; but, as these are too bulky to be conveniently carried to any distance, and frequently cannot be procured on the spur of the occasion, Mr. SALMON, of Canterbury, has invented the following apparatus, for dispersing noxious air from wells.—We are induced to recommend this ingenious contrivance to the notice of our country readers; as it is not very expensive, and will prevent many fatal accidents.

A, B,



A, B, C, D, E, F, represent six lengths of a metal pipe, each being eight feet long, and two inches in diameter: all these joints (excepting that marked F, which is made of copper, for the better support of heat), are manufactured of tin-plate.

G, is a tin-kettle, or vessel (containing about two gallons), that is fastened to the upper pipe F, and the sides of which are perforated

for the admission of air, and consequently for supporting the fire. This vessel must be fixed in such a direction as to have at least five feet of the pipe above its top.

H, is a conical cap, designed to confine the heat to the sides of the tube.

When the machine is applied to the well, a wire must be passed through the holes *a, a*, in the upper part of the length A, and in the lower extremity of B; the joint ought to be luted with *oil-putty*, to render it air-tight; the upper end of each joint should be covered with wire, to prevent it from bending; and to form a receptacle for the putty. The other lengths are then to be managed in a similar manner, till that marked A, reach nearly to the surface of the water. The vessel G, ought to be placed on two pieces of timber laid across the well.

The apparatus, being now fixed, will speedily be filled with the foul air extracted from the well: and as the gravity of the external and internal air is equal, they become stationary. Burning coal or wood must next be put into the kettle G; by which the copper tube, F, is heated; and, the internal air being rarefied, while the external air presses downward, the noxious vapours are gradually dissipated; and a purer element is introduced into the well, whence it issues during the continuance of the fire.

Mr. SALMON remarks (in his communication, inserted in the 9th volume of the "*Repertory of Arts*," &c.), that however small the current of air passing out of the funnel or pipe, F, may appear, the effect is considerable; because such discharge consists wholly of noxious vapour;

vapour; whereas ten gallons of fresh air are probably blown into the well, by means of the common bellows and leather pipe, before two gallons of mephitic vapour are removed. Such purification will be still more effectual, if the fire-kettle, G, be placed at D, when the internal air becomes more rarefied: it ought, however, to be remarked, that this advantage is over-balanced by the atmosphere being rendered unfit for respiration, in consequence of the suffocating properties of the charcoal.

In the year 1794, the Society for the Encouragement of Arts, &c. conferred their silver medal on GEORGE BUTLER, Esq. for his invention of a *Bucket for drawing water from deep wells*. It consists of a common barrel, the head of which is taken out: across the top are fixed two thin bars of iron, having in the centre a small piece of the same metal, which Mr. BUTLER terms a *standard*. This is furnished with a collar, which has four moveable arms; and above it, there are a mortise containing a small brass pulley, and a loop to which the well-rope is secured: farther, a cord is tied to one extremity of the collar, which, after passing over the pulley, communicates with a valve applied to the lower head of the vessel.—The bucket, thus constructed, when let down into the well by a rope, is filled through such valve; and, on being drawn up, the iron cross above mentioned is pressed against two parallel bars, so that the valve is opened, and the water discharged into a trough, or vessel, prepared for its reception.—The principal advantage, arising from this contrivance is, that the bucket is not

only filled expeditiously, but it is also brought up steadily, so that no water is spilt; and, if any of it accidentally drop, it falls directly from the valve into the well, without wetting the descending rope; a circumstance of considerable importance; for, by such continual moisture (which is necessarily occasioned by the common buckets), it speedily decays, while the vessels are seldom drawn up completely filled.—A more minute account of Mr. B.'s invention will be found in the 12th vol. of the "*Transactions*" of the Society above mentioned, where it is illustrated with an engraving.

A patent was granted, in August, 1798, to Mr. JOHN ASHLEY, of Islington, for a method of raising water from wells of any depth, upon a very simple and permanent construction; of which, however, we have not met with a specification.

WEN, is an indolent tumor, or an enlargement of the thyroid gland, which is situated in the anterior part of the neck. This affection frequently occurs, and is endemial in some parts of England; for instance, in Derbyshire. It is uncommonly prevalent among the inhabitants of marshy, low countries, surrounded by woods, bordering on rivers and standing waters, or exposed to southerly, hot winds; and especially among females, young people, children, and persons of a delicate or tender habit: even strangers, who settle in these parts, are not exempt from its attacks. Nevertheless, if timely attended to, it is often cured; but, where it is hereditary, or has been suffered to remain *after* the age of adolescence, its removal is extremely difficult.

The

The principal *causes of wens*, are scrophulous matter; violent exertions; poor, or indigestible food; and bad water. Several authors suppose it to arise from the use of snow-water: thus, FORSTER, in his voyage round the world, observed glandular obstructions to originate from drinking solutions of ice.

Cure:—Where this malady proceeds from a vitiated lymph, as in the SCROPHULA, it will be necessary to have recourse to the treatment recommended under that article.—Should it have been induced by frequently taking solutions of ice, or snow, great benefit may be derived from the use of water, saturated with fixed air.—With a view to dissolve the tumor, various remedies have been devised; of which the following deserve particular notice: Electricity in conjunction with alteratives; for instance, mild mercurials and antimonials; hemlock; or 30 grains of the liver of sulphur dissolved in a quart of water, 2 table-spoonfuls of which are to be taken every 3 hours. During such course, Peruvian bark, or other tonics, ought to be used as auxiliaries. Among external remedies, camphor combined with sweet-oil; or a solution of sal ammoniac in vinegar, have often successfully been applied to the tumor.

Internally, the use of *burnt sponge* (as directed in the article SCROPHULA) has been attended with the best effects, in dispersing wens. The inhabitants of *Derbyshire*, where this remedy is in great repute, take it in the following manner: 15 grains of burnt sponge are triturated together with a similar weight of millepedes, and from 8 to 10 grains of cinnabar of anti-

mony; the whole is to be mixed with honey, or treacle, and taken every morning, two hours before breakfast. This course ought to be continued for two or three weeks; when the medicine is to be intermitted for a similar period. After such interval, the regular use of the composition is to be recommenced, but with this difference, that instead of 1, the patient take 4 doses every day, and 3 grains of calomel at night; though, if the latter prove laxative, it will be advisable to reduce the proportion. His diet will require no particular limitation; except that pure water must be used, instead of malt liquor; and he ought strictly to guard against contracting a cold, or catarrh, during the operation of these alteratives. Such is the method successfully pursued, especially when combined with dry frictions of the part affected, and steadily continued in the summer season, without resorting to any other external application.

WHALE, the COMMON, or *Balaena mysticetus*, L. is the largest inhabitant of the ocean, frequenting the north seas, where it is from 70 to 90 feet, and in those of the Torrid Zone, to 160 feet in length. Its head is uncommonly large, so that it is equal to one-third of its length: in the middle are two orifices, through which it spouts water to a considerable height; and towards the back, there are two small eyes, protected by eye-lashes, like those in quadrupeds. The tail has the form of a crescent; and the colour of the whole body is various, the backs of some being red, and the belly perfectly white. The female produces one, or not exceeding two young whales, after a gestation of nine or ten months, which

which are suckled in the manner of other mammillary animals.

The whale is a very useful fish: its flesh, however, is rank and unfit to be eaten; but the small laminae, known under the name of *whale-bone*, which are taken from the upper jaw, furnish a lucrative article in commerce. The tongue consists of a soft, spongy, fat substance; which, when boiled down, often yields five or six barrels of oil; though the most valuable part is the **BLUBBER**, or fat, found beneath the skin, to the depth of from eight to twelve inches, and which is converted into *train-oil*.

Whales are chiefly caught in the vicinity of Greenland; though a fishery has lately been successfully commenced in the South Sea: As their fat is of essential utility in domestic life, the maritime powers of the north annually send numerous vessels on this pursuit. Each ship is provided with six boats, which are respectively furnished with harpoons, appended to ropes from 200 to 300 fathoms in length. When a whale is perceived floating on the surface of the ocean, and spouting up torrents of water, the boats approach, and a harpoon is discharged. The wounded fish plunges into the deep; and, if the rope belonging to one boat be run out, that of another is speedily fastened to it, to prevent the little bark from being carried down with the whale. As soon as the unwieldy creature re-appears, another, and, if necessary, a third harpoon, is discharged, till it rises to the surface, and at length expires. The whale-bone is then taken out, the blubber cut to pieces, and stowed in hogsheads.

The proper season for the whale-fishery, is from May to July; and

so great are the advantages derived from it, not only as an object of commerce, but also as a nursery for British seamen, that the 26 GEO. III. c. 50, and 32 GEO. III. c. 22, §. 4, permit the fins, blubber, &c. of whales caught by British mariners, to be imported duty free; provided they fulfil the conditions required by those acts, but which our limits will not permit us to specify.—A bounty of 20s. is also allowed for every ton of blubber, obtained by such fishery.

WHEAT, or *Triticum*, L. a genus of plants, comprehending about 16 species, of which the following are the principal:

I. The *repens*. See DOG'S-GRASS.

II. The *æstivum*, or Spring Wheat, is probably a native of Southern Siberia and Sicily, whence its culture has been gradually dispersed throughout Europe: it ripens about the same time as the Winter, or Common Wheat, even though it be sown in February or March. This species is divided into the following varieties, namely:

1. The *T. æstivum, spica et grana rubente*, or Spring-Wheat, with a red spike or ear, and grain.

2. The *T. æstivum, rubrum, spica alba*, Red Spring-Wheat, with a white ear.

3. The *T. æstivum, spica et grana alba*, or Spring-Wheat, with a white spike and grain. These, and all other varieties of the same species, are *beardless*, and may be sown from the end of February till early in May. They are not easily affected by moisture, or severe frost, and afford excellent starch.

III. The *hybernum*, Winter or Common Wheat, is principally raised

raised in Britain: its grains are somewhat fuller than those of the preceding species; and its chief varieties are:

1. The *T. hybernum, spica et grana rubente*, or Common Wheat, with a red ear and grain.

2. The *T. hybernum rubrum, spica alba*, or Common Wheat, with a white ear.

3. The *T. hybernum rubrum, spica et grana alba*, or Winter Wheat, with white ears and grains.

—These varieties are also destitute of beards, and should not be sown earlier than in September, nor later than in November.—They produce the most valuable wheat, which yields the largest proportion of flour.

IV. The *turgidum*, Thick-spiked, or Cone Wheat, each plant bearing from four to eight ears, and each of the latter from 30 to 70 grains: it differs from the preceding species, both in its bearded ears, and its small plump grains, which are more convex on the back than those of the Spring or Winter Wheat.—The principal varieties are:

1. The *T. turgidum conicum album*, or White Cone Wheat.

2. The *T. turgidum conicum rubrum*, or Red Cone Wheat.

3. The *T. turgidum aristiferum*, Large-bearded Cone-wheat, Clog-wheat, Square-wheat, or Rivets.

4. The *T. turgidum, spica multiplici*, or many-eared Cone-wheat.—These varieties are well-calculated for strodg, damp, soils; but the corn is apt to lodge, if it be sown too closely. Its grain is said to be productive of more flour than any other sort of wheat, though it is much browner, and of an inferior quality.

V. The *Polonicum*, or Polish

Wheat, resembles the preceding species; but its stalks attain the height of 5 or 6 feet; the leaves are white-striped, from 12 to 24 inches, and the ears 6 inches, in length. This noble grain is not cultivated to any extent in Britain, though remarkably fruitful, and yielding abundance of flour: It ought to be sown sparingly; as it is apt to lodge, in consequence of which the quality of the corn is impaired.

VI. The *Spelta*, Spelt, or German Wheat, is principally raised in that country, and nearly resembles barley; though its stalks are shorter. In Thuringia, it is generally sown about Michaelmas, in stony, mountainous lands, which are otherwise fit only for oats. In France, Swabia, Franconia, and on the banks of the Rhine, it is more extensively cultivated, even in better soils.—It is well known in commerce, that the incomparable Nuremberg and Frankfort starch and flour, are solely obtained from Spelt-wheat. Hence, we are induced to recommend its culture in the northern parts of this island, which abound in rocky pasture grounds, especially in Scotland, where they are often rented at 1s. 6d. per acre. We must, however, remark that this excellent grain cannot be divested of its husks by thrashing, and that it requires the operation of a mill for that purpose; but it ought to be sown or drilled together with the husks.

VII. The Siberian Spring Wheat, has but lately been introduced into Britain: it attains to maturity as early as the Common Spring Wheat, and increases in the proportion of 25 to one.

VIII. The Switzerland Spring Wheat,

Wheat, ripens a fortnight earlier than the common sort of that season.

IX. The Egyptian Wheat is remarkable for its uncommon fruitfulness: its straw is strong and tough, whence it has received the name of *reed-wheat*. The grains, however, do not yield so large a proportion of flour or meal as any of the preceding species or varieties; and the flour is scarcely superior to that obtained from the finest barley.

X. The Zealand Wheat is chiefly raised in the county of Kent: the straw is long and tough, resembling reeds; the ears are large; the grains white, and *full-bodied*.—This species is well calculated for poor soils; for, if it be sown on rich lands, it is apt "to run up to straw."

Lastly, there is a species of Spring Wheat, cultivated in the island of Jersey, and which is termed *Froment Tremais*; being only three months in the ground: its ears and grains are small, but yield a nutritious flour.—Like the Cone-wheat, the last seven species are furnished with long beards.

The White, or Spring and Summer Wheats, flourish best on light soils, while the other kinds and varieties are more advantageously raised on strong lands. The ground, however, ought previously to be well tilled and pulverized: thus, if a crop of wheat be taken after clover has been ploughed in, it will prove uncommonly fine and abundant.

This beneficial corn is propagated, by sowing it either broad-cast, or by DRILLING it with Mr. COOKE's, or similar drill-machine; or by Mr. JERVAS WRIGHT's implement for sowing wheat and other grain;

which may be affixed to a plough, or manufactured of any requisite size.—Mr. W. obtained a patent for this invention, in 1764; and, as his privilege is now expired, farmers may avail themselves of his contrivance, described in the 15th volume of the "*Repertory of Arts*," where it is farther illustrated by an engraving.

Wheat may also be *dibbled*; but, though a considerable saving is thus obtained in the quantity of seed, yet such method is by no means preferable to drilling. Within a few years, indeed; it has been proposed to increase the plant by dividing the root; and various experiments have been successfully made, with the view of saving seed-corn: the most remarkable is that of Mr. CHARLES MILLER, of Cambridge. He sowed some wheat on the 2d of June, 1766; on the 8th day of August in the same year, a single plant was taken up, divided into 18 parts, and each part separately transplanted. Between the middle of September and October, these plants were again removed, their roots divided into 67 portions; which were likewise set at a proper distance from each other, for enduring the winter. Next, they were dug up a third time, and divided in a similar manner, between the middle of March and the 12th of April; in consequence of which, they produced *five hundred* plants. Thus, *a single grain* yielded in one season:

Ears	-	- 21,109
In number		570,000 fold!
In measure		3½ pecks.
In weight		47 pounds.

For a more particular account of this experiment, the reader will consult the 58th vol. of the "*Philosophical Transactions of the Royal Society*."

Society."—The superiority of the Transplanting System over the Drill-Husbandry, is also fully demonstrated in the 3d vol. of the "*Letters and Papers of the Bath and West of England Society*."

Wheat is subject to the MILDEW, and various other disorders, of which we have already treated, under the heads of BARLEY, CORN, &c. Hence we shall, by way of supplement, communicate two other remedies, which are recommended as being singularly efficacious in preventing the SMUT.—M. HOCHHEIMER, whose authority is often questionable, relates in his German collection of economical and other facts, that wheat moistened with strong vinegar, in the proportion of 24 lbs. of the grain to 1 pint of this liquor, will be perfectly secure from that distemper. The corn should thus be prepared, shortly before it is sown; and, though it be kept for a fortnight in such acidified state, on account of rainy weather, yet it will not receive the least injury.—The next remedy is that proposed by Mr. ROBERT SOMERVILLE ("*Communications to the Board of Agriculture*," vol. ii.), who attributes this disease to an insect resembling the wood-louse, though infinitely smaller; depositing its eggs in the chaff, or downy part of the wheat: and, as these vermin, if sown with the seed, would either totally destroy the stem of the future plant, or cause it to produce *smut-balls*, he advises the infected or suspected grains to be washed in water; by which expedient, all light or imperfect seed may not only be skimmed off the surface, but the greater part of the eggs of such insects will be separated. As, however, some of these eggs, notwithstanding this precaution, adhere to the

grain, Mr. S. recommends the following preparation, that is preferable to infusions of lime, arsenic, and other mineral ingredients, which often retard or destroy vegetation:—Take of tobacco-leaves, of pulverized hellebore, and of Barbadoes aloes, each one pound; boil the two first substances, for about an hour and an half, in 10 English gallons of water. The fluid should next be strained through the sieve; then put into a vessel over the fire; and the aloes be added in a state of powder. The whole must now boil, till the last ingredient be completely dissolved; the liquor ought afterwards to be removed from the fire, and poured into a large vessel: when perfectly cold, it should be diluted with such a quantity of pure water as will amount to thirty gallons. The seed ought to be immersed in this preparation, and briskly agitated for 20 minutes; after which it must be dried on canvas, or on the floor.—Mr. S. remarks, that if 2 lbs. of coarse glue or gum-arabic be dissolved, its tenacity will cause the bitter ingredients to adhere more firmly to the grain.—The expence of this compound is said not to exceed seven or eight shillings, and to be sufficient for twelve bolls (six English quarters) of wheat; and, though such liquor be not prejudicial to vegetation, it is so nauseous, that neither pigeons, nor any other of the devouring tribe, will touch it. Mr. SOMERVILLE, therefore, proposes the following method of destroying vermin on the growing crop: A piece of double flannel, about two yards in breadth, and sufficiently long to go across a ridge, ought to be provided with cords at each end, to serve as handles,

would be so light and brittle, as to be dispersed in *winnowing*: the straw will at the same time be tough, and fit for thatching; whereas, without adopting such method, it could not fail of being beaten to pieces in thrashing.—See also the article GRANARY.

WHEAT, the Cow. See COW-WHEAT.

WHEEL, is a simple machine, consisting of a nave, fellicies, and circular brim, or pieces of wood generally surrounded with iron; and thus revolving on its axis.

Wheels are of various breadths, according to the size of the carriages for which they are designed. Mr. CUMMING (in his elaborate "*Observations on the Effect which Carriage-wheels, with Rims of different Shapes, have on Roads*;" published in the 2d vol. of "*Communications to the Board of Agriculture*"), has satisfactorily proved, that wheels, with *cylindrical rims*, are doubtless preferable to any other. Our limits will not permit us to analyze this valuable memoir: we shall, therefore, only remark, that such wheels advance in a straight line; being subject to little or no friction at the circumference: nor do they press against the linch-pin; or tend to displace, break the texture, or retard the induration of the parts on which they revolve: and, their motion on the soil meeting with the least possible resistance, they serve to improve the roads, to relieve the cattle, and to preserve the *tires*. On the contrary, *conical rims* require a constant force to keep them in a direct line, and that force occasions additional friction on the rim: farther, they increase the rubbing on the axis; and, in dry weather, reduce the best materials to powder; but,

if the roads be soft, they break and disorder the texture of the ground; render the labour of cattle more difficult; and contribute to the wearing of the *tires*.—Mr. CUMMING, therefore, justly concludes, that great advantages may be derived, by substituting *cylindrical* for *conical* rims; and it must be ascribed to an unaccountable infatuation, that the bent axis, and conical rims, are still retained in use, particularly on turnpike-roads. Those of our readers, who wish more minutely to investigate this important subject, will consult Mr. C.'s essay before quoted; and which is illustrated by an engraving.

In the year 1793, the Society for the Encouragement of Arts, &c. rewarded Mr. JOSEPH DIXON with the sum of 15 guineas, for his contrivance of a *Preservative Wheel*, that may be affixed to a walking wheel-crane; by means of which all accidents to labourers will be obviated, in case the weight should at any time overcome the power. His implement is attached to the axis of the crane-wheel; over the latter are passed two ropes, of which the men may take hold, so as to suspend themselves with the greatest safety, during the time of danger. Pullies are likewise placed near such preservative wheels, over which the ropes turn, and are thus prevented from taking fire, in consequence of the friction.—For a more explicit account of this useful invention, we refer to the 11th vol. of the Society's "*Transactions*;" where his statement is elucidated by an engraving.

A patent was granted in August, 1799, to Messrs. GEORGE DODSON, and JOHN SKIDMORE; for a method of making the naves or stocks

stocks of wheels, of cast-iron, brass, or compound metal. A description of their process is inserted in the 12th vol. of the "*Repertory of Arts*," &c.; together with an appropriate plate.

WHEEL-CARRIAGES. See **CARRIAGE**; **CART**; **WAGGON**, &c.

WHEEL-DRAG. See **DRAG**.

WHETSTONE, is a kind of sand-stone, dug up chiefly in Derbyshire, and other northern counties. It is of a dusky-yellow colour; resists the action of acids, though permeable to water: being of a rough, and coarse structure, it is easily crumbled or broken between the fingers, and will not strike fire against steel. This fossil affords an useful article of trade, and is employed for sharpening knives, scythes, bills, and other implements of rural and domestic economy.

WHEY, is the serum or watery part of milk, which remains after the cream and coagulable matter of that fluid are removed, either by churning, or by separating it with **RENNET**, vinegar, cream of tartar, &c.

Whey is an agreeable and wholesome liquid: the best is that separated by rennet; as a considerable portion of curd and saccharine particles are suspended in it; whereas the serum, arising from the spontaneous decomposition of milk, possesses an acid taste, is totally divested of the nourishing properties of milk; and ought to be used only in certain cases of fever, or inflammation. On the other hand, the latter is a pleasant, cooling, beverage, during the heat of summer, and may be advantageously drunk by the scorbutic and consumptive.

Scalding Whey is prepared by a

simple expedient, adopted in the midland counties, for improving the quality of **WHEY BUTTER**. It consists in suspending each meal of cream, as it is taken off the whey, over the fire, till it become *scalding hot*; care being taken that it may not boil. Thus, the butter is greatly improved; and, if the milk have become rancid or bitter, from the cows having eaten turnips, or barley-straw, such disagreeable taste will be completely removed.

Mustard Whey is made by boiling $1\frac{1}{2}$ oz. of mustard in a pint of milk, and an equal portion of water, till the curd be entirely separated; after which the liquid is strained through a cloth. This preparation is one of the most pleasant and efficacious forms, in which mustard can be taken; the dose being one tea-cupful, which may be sweetened with a little sugar, and taken three or four times in the course of the day.

White-wine Whey is made by pouring equal parts of white wine and skimmed milk into a bason; and, after they have stood for a few minutes, by adding a double portion of boiling water. In a short time, the curd will collect, and subside at the bottom: the whey is now to be strained into another vessel; and sweetened with sugar: a sprig of balm or slice of lemon will greatly improve its flavour.—This kind of whey affords a salubrious beverage; and, when taken immediately before retiring to bed, it is particularly serviceable to those who have undergone severe bodily fatigue; or been exposed to the inclemency of the weather; as it will excite a gentle perspiration; and thus obviate a sudden cold or catarrh.

WHINS. See **FURZE** the Common.
Y 2 **WHIN.**

WHIN-CHAT, or *Motacilla rubetra*, L. a bird found on British heaths and commons, during the summer months: it is about five inches in length; the upper parts of its body being blackish, edged with rufous spots, and the lower extremities are reddish-white; but the legs are black.

Whin-chats build their nests early in the spring, near some low bush or stone; where the female deposits five dusky-white eggs, marked with black spots.—These birds subsist principally on insects; and, when fat, the flavour of their flesh is esteemed equal to that of the **ORTOLAN**.

WHISKEY, a spirituous liquor, chiefly prepared in Scotland and Ireland, by distilling barley.

With respect to its *relative salubrity*, whiskey is doubtless preferable to any home-made brandy drawn from malt; as the former, though strong, is not very pungent, and, if properly distilled, it is free of any empyreumatic taste or smell.—A moderate, and *occasional* use of it, by way of cordial, after great bodily fatigue, may, to some hard-labouring persons, not be injurious; but, when such practice is carried to excess, as in Scotland and Ireland, it deserves severe animadversion; and, though the legislature has wisely imposed heavy duties on the distilleries, we fear that the immense consumption of this liquid fire, can be prevented only by the most rigorous measures.—If, however, the lower classes of people cannot be legally restrained in their vicious propensities, the only remedy left to the power of government, would be the prohibition of employing *grain* for such vile and destructive purposes.—See the article **SPIRITS**, p. 118.

WHITE. See **COLOUR-MAKING**; vol. ii. p. 36.

WHITE-OF-AN-EGG. See **ALBUMEN**.

WHITE-BEAM. See **HAWTHORN**.

WHITE-BOTTLE. See **SPATLING-POPPY**.

WHITE-LEAD. See **LEAD**.

WHITE-ROT. See **PENNY-WORT**, the Marsh.

WHITE-SWELLING is a tumor of the joints, but chiefly of the knee: at first, it is not perceptibly enlarged; being of the same colour as the skin; very painful, and diminishing the power of motion.—There are two species of this disorder; namely, the *rheumatic*, and *scrophulous*. As it is of the first consequence to distinguish these maladies, the origin of which is essentially different, we shall state the symptoms peculiar to each.

The *rheumatic white-swelling* is attended with acute pain over the whole joint; and which is increased by heat: the patient finds the greatest relief in a relaxed position; the tendons become rigid; and the joint appears as if the bones were enlarged. The tumor increases to three or four times the size of the knee, and feels elastic to the touch; while the limb decreases, or sometimes becomes dropsical: at length, abscesses are formed; discharging matter which soon degenerates into a fetid ichor. Unless, therefore, a cure be timely effected, the patient is attacked with a hectic fever, which generally closes the scene of misery.

In the *scrophulous* kind, the pain is more acute, and confined to *one spot*: as the disorder gains ground, the swelling, and stiffness increase, while the ends of the bones become visibly

visibly enlarged. Similar elasticity is perceivable, and abscesses are likewise formed; which, on being opened, discharge an offensive humour; the bones decay, and pieces are often ejected through the orifices of the wounds. The adjacent parts become progressively affected, till the sufferings of the patient are also terminated by the hectic fever.

As the distinction above pointed out, sufficiently explains the proximate causes, we shall only mention those which occasionally occur; and the principal of which are, suppressed perspiration; injudicious treatment of cutaneous disorders; especially of the measles, small-pox, rose, &c.; external violence, such as falls, blows, and frequent kneeling.

Cure:—In the rheumatic white-swelling, which, at first, is of an inflammatory nature, it will be advisable to adopt a cooling regimen. Farther, blood should be taken from the diseased part, by cupping or scarification; a practice which is far preferable either to venesection or to the application of leeches; and it may be repeated according to the strength of the patient, and urgency of the symptoms. Next, a blister must be applied to the opposite side, and kept open, till the scarified part is healed.

Internally, mild cooling laxatives should be occasionally taken, and heating liquors, as well as coarse food, must be strictly avoided. If a stiffness of the knee remain, after the swelling has subsided, great benefit will be derived from the application of pure, warm olive oil, and from gentle frictions, repeated three or four times every day.—But, where suppuration has al-

ready taken place (which may be ascertained by the softness of the tumor); or, if the disorder make rapid progress, professional advice should be speedily procured.

In the *scrophulous* white-swelling, the treatment specified under the head of SCROPHULA, should be resorted to without delay.—When this affection is confined to the smaller joints, it has by those means, been sometimes cured; but, when the larger joints, for instance, the knee, ankle, &c. are thus diseased, amputation is the only remedy. If, however, the whole system be tainted with a scrophulous acrimony, even that operation is frequently ineffectual.

WHITE-THORN. See HAWTHORN.

WHITE-WASHING, is the act of cleansing ceilings and walls, with a solution of lime in water, to which a little size is occasionally added.

The practice of white-washing apartments eminently contributes to the preservation of health: hence we would recommend the proprietors of cottages, to enjoin their tenants regularly to perform this operation, at least once annually. In countries abounding with lime, the expence will be trifling; and, even though this article should be purchased, the whole cost will not exceed one shilling. It ought to be remarked, however, that *hot* or *quick-lime* is preferable to any other, and must be employed as soon as possible after it is slacked; for, by attending to this circumstance, its effects in destroying vermin, and removing INFECTION, will be considerably increased.

WHITING, or *Gadus merlangus*, L. a well-known fish, of an elegant

elegant shape, rarely exceeding 10 or 12 inches in length, and generally weighing from 8 to 16 oz.

During the spring, extensive shoals of whittings frequent the British seas; but seldom come nearer the shore than within half a mile, or retire farther from it, than about three miles.—They are caught in considerable numbers by the hook and line, and afford great diversion:—in the rivers Thames and Medway, these fish are prohibited to be taken, if less than six inches in length; nor are they allowed to be caught at any season, excepting from Michaelmas to Ember-week.

As an article of diet, the whiting is justly valued; being exceedingly delicate, tender, and nutritious; so that it affords proper aliment for invalids, and persons having a weak digestion.

WHITING, in Mineralogy. See CHALK.

WHITLOW, or WHITLOB, a painful swelling of the extremities of the fingers, beneath the nails, and usually terminating in a discharge of serous fluid, that is frequently so acrid as to corrode the periosteum, or membrane lining the bones, which thus become carious. It is always attended with inflammation, and sometimes to so violent a degree as to affect the whole arm.

Where whitloes arise from external causes, it will be proper to apply emollient poultices, in order to effect a suppuration. Should such tumors, however, proceed from unknown causes, it will be advisable to apply a few leeches, and afterwards ardent spirits, or other astringents; but, if the bones have already become carious, a

total or partial removal of the affected part can alone effect a cure. The following preparation has been extolled, as being very efficacious in common cases of whitloes; though we cannot vouch for its success:—Take equal parts of pelitory of the wall, previously bruised, and hog's-lard; let them be properly mixed, folded in several papers, and surrounded with wood-embers, of such a degree of heat as to incorporate the ingredients, without burning the covering. The ointment, thus prepared, must be spread on a piece of soft linen, and applied to the whitloe, two or three times every day, till the tumor be healed.

WHITLOW-GRASS, the COMMON, or NAILWORT, *Draba verna*, L. a native plant, growing on walls and in dry pastures; blowing in the months of March and April. According to Dr. WITHERING, the Nailwort is one of the earliest flowering plants, and may be used as salad. It is also eaten by horses, sheep, and goats; but not relished by cows, and is totally refused by hogs.

WHORTLEBERRY, the Red. See BILBERRY.

WIDGEON, the RED-HEADED, or *Anas ferina*, L. a bird of passage, frequenting fenny places in the winter season: its breast is black; the back and coverts of the wings are of a pale grey, intermixed with narrow black lines; and the legs are of a lead colour.

Widgeons subsist on small fish of every kind; their flight is rapid; and they frequently associate with wild Ducks, TEAL, and other aquatic birds. Considerable numbers of the former fowl are exposed for sale in the markets of the metropolis.

lie, under the name of *Dun Birds*, and are greatly esteemed at the tables of the luxurious.

WILD-BRIAR. See **DOG-ROSE**, the Common.

WILD-CLIMBER, the Great. See **TRAVELLER'S-JOY**.

WILDERNESS. See **MAZE**.

WILDING. See **GRAB-TREE**.

WILD-PARSLEY. See **MILK-WEED**, the Marsh.

WILD PEAR-TREE. See **HAW-THORN**.

WILD-RADISH. See **RADISH**.

WILD-ROCKET. See **ROCKET**.

WILD-TANSY. See **SILVER-WEED**.

WILLOW, or *Salix*, L. a genus of trees comprising 42 species; 22 being indigenous, of which the following are the principal:

1. The *viminalis*. See **OSIER**.

2. The *caprea*. See **SALLOW**.—Beside the purposes to which this species may be applied, according to our account, p. 13 of the present volume, its soft, flexible, white, and smooth wood, is used for making handles to hatchets, prongs, spades, and other rural implements: it also furnishes shoe-makers with *cutting* and *whetting-boards*, on which they cut leather, and sharpen the edges of their knives.—In Sweden, the young bark is not only used for tanning, but also, in combination with that of the alder-tree, for dyeing linen-yarn of a fine black colour.

3. The *purpurea*, v. *Helix*, v. *monandra*, **ROSE, PURPLE**, or **RED WILLOW**, grows in hedges, watery places, and the sides of rivers, where it blossoms in the month of April or May. Its long, slender, and flexible shoots, are manufactured into baskets, cradles, and other articles of wicker-work.—This species eminently deserves to

be cultivated in the sandy banks of rapid streams; as it is one of the most useful trees for consolidating loose soils, and even drift-sands.

4. The *triandra*, or **SMOOTH WILLOW**, grows to the height of from 6 to 10 feet, in moist woods, hedges, and the banks of rivers; flowers in the month of April.—Its bark, in doses of from one to two drams, has been successfully employed in agues.

5. The *pentandra*, **SWEET**, or **BAY-LEAVED WILLOW**, is found in forests and hedges, principally in the North of England, where it flowers in April.—The wood of this species remarkably crackles in the fire; the young shoots are eaten by sheep and goats; the leaves afford a yellow dye; and the pliant branches are converted into hampers, or the larger kinds of baskets.—For medicinal purposes, the bark from young trees is even preferable to that of the preceding species.—Lastly, the down of the seeds, when mixed with one-third part of cotton, has been found to be an useful substitute for that vegetable wool, in the manufacture of stockings, and other articles.

6. The *vitellina*, **GOLDEN**, or **YELLOW WILLOW**, abounds in *osier-holts*, and flowers in May. Its shoots are used by cradle or basket-makers; its white, tough, pliant twigs, are employed by nursery men and gardeners, for tying up the branches of wall and espalier-trees.—The wool surrounding its seed-vessels, when mixed with cotton, affords excellent yarn for various manufacturing purposes.

7. The *amygdalina*, or **ALMOND-LEAVED WILLOW**, grows on the banks of rivers, where it flowers in April or May; and a second time

in August.—The tough branches of this species are employed like those of the preceding.

8. The *fragilis*, or CRACK WILLOW, attains a considerable height in moist woods, hedges, and on the banks of rivers; it blossoms in April or May.—This tree grows with uncommon luxuriance, and will admit of being *cropped* every year: it has received this name from the remarkable brittleness of its branches; which, if stricken with a finger, break off at the shoot of the current year. The bark of these branches, possessing uncommon bitterness and astringency, has been recommended as a substitute for the Peruvian: it is certainly preferable to that of all other native trees; and, if given in doses about one-third exceeding the proportion of such expensive drug, it may, with advantage, be used where the latter is indicated. When administered in powders, of from one to two drams, it has also proved efficacious in removing intermittent fevers. On account of its early blossoms, which are very grateful to bees, it should be used near their hives:—a decoction of the roots imparts a reddish-brown colour.

9. The *herbacea*, or HERBACEOUS WILLOW, is the smallest tree of the willow-kind; its stem not exceeding 2 feet in height, and the branches being scarcely one foot long. It grows in moist, mountainous situations, chiefly on the sides of Snowdon, and the mountains of Westmoreland, Yorkshire, and Scotland; where its yellow flowers appear in July.—This species is, according to HOFFMANN, fondly eaten by horses and other cattle.

10. The *rubra*, or RED WIL-

LOW, is a very scarce species, being found wild only in the Osierholt between Maidenhead and Windsor: it flowers in the month of May. There is a variety of it, known under the names of the Norfolk, Hertford, Hereford, and Broad-leaved, Red-hearted Huntingdonshire Willow, which may advantageously be planted in moist situations, on account of the luxuriance and rapidity of its growth. The tough, light wood of this tree is employed for gates, hurdles, and other agricultural implements: the pliant twigs are in great request for making baskets, cradles, and also for tying up wall fruit-trees.

11. The *cinerea*, or SALLOW-WILLOW, is the most common of the kind, abounding in moist hedge-rows, and woods; where it attains the height of more than six feet, and blossoms in April.—This species is chiefly remarkable for its beautiful flowering branches, which are gathered about a week or ten days before Easter, and sold under the name of *palms*.

12. The *alba*, WHITE, or COMMON WILLOW, abounds in woods, hedge-rows, in wet meadow, and pasture-grounds, where it attains a considerable size; flowering in the month of April.—Its blossoms are eagerly visited by bees; its leaves and young shoots are eaten by horses, cows, sheep, and goats:—the wood is employed in making poles, hoops for casks, stakes, and likewise for fuel:—the bark communicates a cinnamon colour to yarn, and is not only advantageously used in tanning leather, but has also, like that of the Crack and Smooth Willows, been successfully administered in agues.—The Rev. Mr. STONE ("Philosophical Transactions of the Royal Society,"

Society," vol. liii.) directs such bark to be gathered in the summer, when it abounds with sap; to be dried in a moderate heat; and to be taken in doses of one dram, every 4 hours, between the fits: in a few obstinate cases, Mr. S. found it necessary to mix one-fifth part of Peruvian bark with that of the Common Willow.—As this tree frequently grows in wet, marshy situations, where agues are most prevalent, its bark promises to afford a valuable substitute for the foreign drug, especially as the price of the latter has lately been so exorbitant, that the poor cannot easily procure it; while its quality becomes every year more impaired, by base and fraudulent adulterations.

Beside these indigenous species, there are two exotics, which deserve to be mentioned:

1. The *Babylonica*, or WEEPING-WILLOW, is a native of the East, whence its culture has been introduced into Britain. It flourishes by the sides of rivers, attaining to a considerable size; and its long, depending branches, contribute greatly to diversify the scenery: it is raised chiefly for ornament.

2. The Dutch Willow has lately been transplanted into England. Its wood is chiefly employed for posts, rails, gates, &c.; to which purposes it is well adapted.

All the species above enumerated, delight in moist situations, excepting the sallow, which thrives better in a dry soil. They may be easily propagated by planting *sets*, *cuttings*, or *truncheons* of willows, about 6 years old, either in spring or in autumn; as they speedily take root, and, in the course of a few years, amply repay the expence and trouble bestowed on

their culture. In order to ensure success, the truncheons ought previously to be steeped in soft water, for a few days: both ends must then be obliquely smoothened; the upper part be covered with soil, and exposed with its orifice towards the east. The earth should be moderately compressed with the foot, around the stem, so that it may more readily absorb moisture: in the third year, the top should be cleared, to promote the growth of the bark.—The *Yellow Willow*, however, ought never to be planted too near *wells*, or *springs*, because its spreading roots retard their course: thus, Mr. BORDLEY (in his "*Essays and Notes on Husbandry*," &c.) mentions an instance, in which a spring was completely choked up, by their rapid absorption of water. On the contrary, this species may with advantage be propagated in swampy situations; as its roots tend to consolidate the ground; and, after a few years, the soil will generally be converted into a firm meadow.

WILLOW-HERB, or *Epilobium*, L. a genus of plants consisting of 13 species, 8 being indigenous; of which the following are the principal:

1. The *hirsutum*, GREAT HAIRY, or LARGE-FLOWERED WILLOW-HERB, or Codlings and Cream, is perennial; grows in moist hedges; ditches, the banks of brooks, rivers, and lakes; where it flowers in July.—The young tops of this vegetable possess a delicate odour, resembling that of scalded codlings; but which is so transitory, that after they have been gathered five minutes, their fragrance is entirely dissipated.—Horses, sheep, and goats, eat the plant; though it is not relished by cows, and is wholly

wholly rejected by hogs.—According to BECHSTEIN, this herb remarkably absorbs the inflammable air generated in moist situations; so that it deserves to be cultivated in the neighbourhood of dwellings on marshes, both on account of such useful property, and its large beautiful purple flowers.

2. The *angustifolium*, or ROSE-BAY WILLOW-HERB, is also perennial, being frequent in woods and hedges; where its rose-coloured flowers appear from June to August.—This species is eaten by sheep, cows, and goats; but is refused by horses and hogs.—An infusion of the leaves produces intoxicating effects; though the suckers of the roots, when properly dressed, afford a wholesome dish.—The inhabitants of Kamtschatka brew a kind of ale from the pith of this plant, which they convert into vinegar; and the down, with which its seeds abound, has, in combination with cotton, or fur, been advantageously manufactured into stockings, and other articles of wearing apparel: this fibrous substance may also be profitably employed as a material for making paper.

WIND, is a perceptible agitation or commotion of the atmosphere, occasioned by a strong current of air from one region to another.

The temperature of climates being greatly modified, by the winds; and navigation depending almost entirely on their influence, the origin of this powerful agent has naturally engaged the attention of many inquisitive naturalists: hence different theories have been framed, with a view to account for the cause of these changes; but, as none of the conjectures appear to us conclusive, or satisfactory, we

we shall briefly state the effects produced on the human frame, by this airy meteor.—Thus, a south wind debilitates and relaxes the whole system; and disposes the body to catarrhal diseases: on the contrary, the north wind invigorates the animal fibre, and remarkably contributes to health; because it dissipates noxious vapours, while it purifies the air, and renders it serene.—Winds blowing in the earlier part of the day, are of a drying nature; and, consequently, walking in the forenoon is more salutary than at any other period; whereas the evening breezes, being generally damp and cool, are less beneficial both to the healthy and infirm: besides, the latter are frequently accompanied with rain.—The relative salubrity of these various winds, however, greatly depends on local circumstances: for, if they blow across the sea, over mountains, or continents, they necessarily convey, and communicate to the atmosphere, a greater or less degree of cold or humidity.—See also ANEMOSCOPE; CLIMATE; and WEATHER.

WIND, or BROKEN WIND, a disorder incident to horses: in this affection, they cannot breathe freely, and their natural functions are impaired: it is usually preceded by a dry cough, and may be known by the animals eating litter, and swallowing frequently copious draughts of water.

Farriers are by no means agreed, respecting the cause of this malady: Mr. GIBSON attributes it to an injudicious or hasty method of feeding young horses, especially those for sale; so that their lungs, and the other organs contained in the chest, become preternaturally enlarged;

enlarged; in consequence of which, the chest is not sufficiently capacious to admit of their due expansion. According to his advice, the diseased animal should be bled two or three times; when its bowels must be opened by a dose of calomel, and the following balls be given for several days:—Let 8 oz. of *aurum mosaicum* (which consists of equal parts of mercury, tin, sal ammoniac, and sulphur); 4 oz. of myrrh, and an equal quantity of elecampane, both reduced to powder; bay-berries and aniseed, each 1 oz.; with half an oz. of saffron, be triturated together, and made into balls, with a sufficient quantity of oxymel of squills.—This preparation may be divided into 12 doses; but, as the *aurum mosaicum* is a tedious and expensive preparation, either 8 oz. of pulverized squills, or a similar portion of gum-ammoniac, or 4 oz. of each, may be safely substituted.

Mr. GIBSON directs the food of broken-winded horses to consist principally of corn, slightly moistened with urine or pure water; and, if two or three cloves of garlic be given with each meal, they will afford great relief; as that root stimulates the solids, and dissolves the viscid fluids, which impede the action of the lungs.

Mr. TAPLIN, however, conjectures that broken wind originates from obstructions in the minute vessels of the lungs; which are occasioned by foul feeding, want of sufficient exercise, and inattention to cleansing the intestines of horses, by occasional purgatives; so that the elasticity of the whole system is impaired. He is therefore of opinion, that a cure can only be effected in an early stage of the disease; and, with this view,

he recommends frequent, but moderate bloodlettings, which should be succeeded by a regular course, or three doses, of the following purgative balls, namely:—Take, of Socotrine aloes, nine drams; jalap and rhubarb, of each $1\frac{1}{2}$ dram; gum-ammoniac, calomel, and ginger, of each 1 dram; and 60 drops of oil of juniper. These ingredients are to be carefully incorporated, and formed into 3 balls, with a proper quantity of syrup of buckthorn. Three days after the operation of the third dose, Mr. TAPLIN directs one ball, prepared in the following manner, to be taken every morning, for such a period as will enable a person to judge, whether there be any prospect of recovery:—Take 8 oz. of the best white soap; 3 oz. of gum-ammoniac, and a similar quantity of guaiacum; 2 oz. of aniseed, and the same portions of liquorice, myrrh, and Benjamin; also balsam of Peru, Tolu, and oil of aniseed, of each $\frac{1}{2}$ an oz.: these articles are to be compounded into a mass, with Barbadoes tar, and divided into 20 doses, or balls.

Throughout the whole treatment of this malady, whether Mr. TAPLIN's or Mr. GIBSON's directions be followed, it will be advisable to allow but little hay and water, lest any accumulation should take place in the intestines.—The animal should likewise be moderately exercised; and the greatest precaution taken to prevent a cold. Thus, it will speedily be ascertained, how far a total or partial cure may probably be obtained.

WIND-FLOWER. See ANEMONE.

WIND-GALL, in farriery, signifies a windy swelling, on both sides of the back sinew, above the fetlocks,

fetlocks, in the fore or hind-legs of a horse; though these tumors may likewise arise in various other parts of the body.

Wind-galls are generally occasioned by strains or bruises on the sinews; which, on being over-stretched, produce ruptures of the fibres: but, if these swellings happen in the interstices of large muscles, and appear distended, similar to air-bladders, they may be safely opened, and dressed as a common wound.

On their first appearance, wind-galls should be treated with restringents, and covered with bandages: hence, the tumefied parts ought to be bathed twice a day with strong vinegar; or the swelling may be fomented with a decoction of oak-bark, pomegranate, and alum, boiled in verjuice; applying to it a roller previously soaked in this liquid. Some farriers employ red-wine lees; others use carriers' shavings moistened with the former, or with vinegar, as a substitute for the bath and fomentation.

Should, however, these applications prove unsuccessful, it has been recommended to open the parts affected with an awl, or by means of a knife: or, which is still preferable, to apply mild blistering plasters, that will effectually discharge the confined humour; disperse the inclosed air, and gradually accomplish a cure.

WIND-INSTRUMENTS, or those which must be played by the *breath*, are generally opposed to such as are *stringed*, or those of the vibrating kind.

The principal wind-instruments are the fife, flageolet, flute, French-horn, hautboy, bag-pipe, clarionet, and trumpet.—Playing on the most fashionable of these, is esteemed an

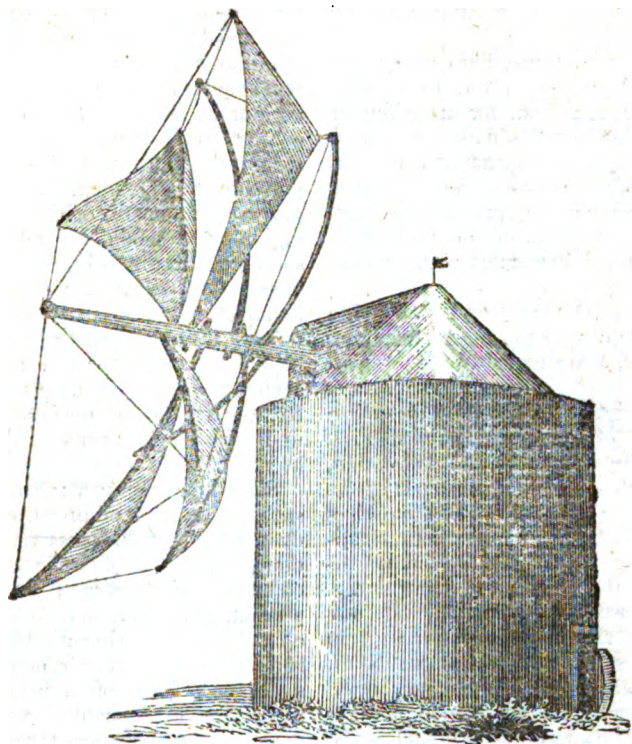
elegant acquirement; but we deem it necessary to remark, that though the occasional indulgence in such practice, may afford an innocent and agreeable relaxation, yet it should not be too frequently enjoyed: for, as the muscles of the abdomen are thus necessarily contracted, the circulation of the fluids is impeded; and asthma, cough, pulmonary consumption, or other fatal maladies, are often the melancholy consequence.—See also **FLUTE**.

WINDMILL, is a contrivance for grinding corn, or raising water: it is put in motion by the action of the wind upon its sails, or vanes.

In the 55th vol. of the "*Gentleman's Magazine*," for 1785, we meet with an account of a wind-mill for *raising water*, by Mr. MERRIMAN. It is furnished with a large sail, affixed to a mast, that inclines to the horizon, and thus imparts motion to certain pieces of machinery termed *braces*, which are connected with *forcers*; so that every gale of wind will act on the apparatus, and raise a greater or less quantity of water. During tempests, the mast will bend, and the sail yield to their force; so that, when their violence is abated, the upper parts are restored to their original position, without injuring the works.—The mechanical description of such contrivance being foreign to our plan, the inquisitive reader will consult the work above cited.

As windmills essentially contribute to agricultural and domestic convenience, we shall present our readers with a delineation of a specimen of those employed in the vicinity of Lisbon; because the construction of their sails is in some respects different from, and, in the opinion of Lord SOMERVILLE, superior to, those used in Britain.

The



The advantages of mills, on this construction, are stated by his Lordship to be the following :

1. That the broad part of the sail is at the end of the lever, or branch, and thus an equal resistance may be overcome with less length of branches, or arms. These being consequently shortened, a considerable weight of timber will be rendered unnecessary, and a material saving of expence be obtained, in the height, prime-cost, and subsequent repairs of the mill.

2. The sails, constructed on the plan above represented, may be *set* to draw in a manner similar to the *stay-sails* of a ship ; and, as they

are swelled more than those in England, Lord S. remarks, that they will render it unnecessary to bring the mill so frequently to the wind ; a practice which, in machines of the usual construction, is always attended with considerable trouble.

In November, 1783, a patent was granted to Mr. BENJAMIN WISEMAN, for his invention of sails, with horizontal levers, designed to communicate motion to windmills. His patent is now expired ; but, as a description of such machinery would be unintelligible without the aid of engravings, the reader is referred to the 4th vol. of the "*Re-*
peritory"

pertory of Arts," &c.; where his specification is illustrated by two plates.

A patent was likewise granted in December, 1795, to DANIEL MAUNSEL, Esq. for his invention of a horizontal windmill, upon new principles, for grinding corn, and for other purposes: an account of his complex machinery is inserted in the 7th vol. of the work above cited, and elucidated with two engravings.

WIND-PIPE, or *Trachea*, is a tube composed of cartilaginous rings, and situated in the fore part of the neck, before the gullet. After descending to the third or fourth joint of the back, it divides itself into two branches, called *bronchiæ*, which enter the substance of the lungs, and there spread themselves in numberless ramifications, terminating in the air-cells, that constitute the chief part of the lungs. Towards the posterior part, the rings are fleshy, or fibrous; in consequence of which structure, the wind-pipe is enabled to shorten or lengthen itself, as well as to dilate or contract the diameter of the passage. The internal surface is lined with a very sensible membrane, which, like the whole trachea, is continued from the *larynx*, being the upper part of the former, below the root of the tongue; and lubricated by means of numerous glands. This membranous form facilitates the descent of food; and, by its contraction and dilatation, enables us to expel and admit the air in greater or smaller quantity, and with more or less velocity, as may be required, in speaking or singing.

The affections to which this part is exposed, are but few. Thus, if acrid or corrosive vapours, or exhalations, have been inspired, de-

mulcents, and mucilaginous drink, for instance, oil, milk, or linseed-tea, should be swallowed in copious draughts, and the steam of the same liquids frequently inhaled; or, the throat ought to be diligently gargled with them, in order to sheath the internal surface, and prevent inflammation. For this purpose, a spoonful of the following mixture should be taken at short intervals; namely, equal parts of sweet-oil, syrup of violets, and honey of roses, properly incorporated. But, if the inhaled vapours have been of a corrosive nature, such as those of arsenic, aqua-fortis, &c. the treatment recommended under the article ARSENIC, should be immediately adopted.

Sometimes improper substances, such as crumbs of bread, coarse dust, &c. enter this passage; and, though they may often be expelled by a fit of coughing; yet great precaution is necessary, that such effort be not too violent; because ruptures of blood-vessels, or instant suffocation, have often been the melancholy consequence. Should, however, the substances fallen into the wind-pipe, be pointed, or of large dimensions, they generally produce fatal effects; unless relief be timely obtained by an operation, which has occasionally proved successful.—See also vol. ii. p. 414.

With respect to *inflammation* of the wind-pipe, we refer the reader to vol. iii. p. 464.

WINDOW, an aperture left in the walls of houses, with a view to admit the light, and which is generally provided with glass, disposed in sashes.

A patent was granted in May, 1783, to Mr. WILLIAM PLAYFAIR, for his method of making bars for sash-windows, of copper, iron, or any

any mixed metal, containing copper. Although the term of his privilege is now expired, yet as a mere description would be insufficient to explain the manner in which the requisite forms are imparted to the metals, the curious reader will consult the 8th vol. of the "*Repertory of Arts*," &c. where a full specification is inserted, and illustrated with an engraving.

Another patent was obtained in 1801, by Mr. DAVID YOUNG, of Connecticut, in North America; for a new mode of raising sash-windows. His contrivance is remarkably cheap and easy: it consists simply, in boring three or four holes in the side of the sash, and inserting in them, common bottle-corks, so that the latter shall project about the 16th part of an inch. Such corks press against the window-frames, along the usual groove; and, by their elasticity, support the sash at any requisite height.—See also COUNTRY-HOUSE; FARM-HOUSE, &c.

WINE, is an agreeable, spirituous, aromatic liquor, prepared by fermenting the juices of those vegetables which contain saccharine matter. Its constituent parts are: 1. *Sugar*, or the sweet juice, usually termed *must*, from which the liquor is obtained; 2. *Alcohol*, or pure spirit, that is disengaged during the vinous fermentation; and 3. *Water*, which is the most innocuous part of the whole, and tends to moderate its properties, that may otherwise prove hurtful.

Wines, in this country, are generally divided into two classes, namely, *British*, or *Home-made*, and *Foreign*. The first division includes the liquors procured from currants, gooseberries, raspberries, raisins, &c.; the preparation of

which being known to every notable house-wife, we shall only state the method, in which *Foreign* wines are obtained from the fruit of the vine.

When the grapes are sufficiently ripe, they are gathered, and submitted to the action of a press; from which their juice runs into vessels furnished for that purpose. Here it remains for several hours, or for a few days, according to the temperature of the atmosphere: when the fermentation commences, the liquor rises, and a considerable portion of fixed air, or carbonic acid gas, is evolved. At the expiration of some days, the fermentation ceases: when the liquor becomes clear, and cool, it is poured into other casks or vessels, where it undergoes a slight degree of a new fermentation; in consequence of which, it becomes divested of all feculent particles, while its taste and flavour are remarkably improved. In order to clarify it still farther, the ALBUMEN, or whites of eggs, ISINGLASS, &c. are either suspended or dissolved in the cask; and various other expedients are practised, most of which have already been stated in the article CLARIFICATION, as well as in different parts of this work: a summary of these materials, the reader will find in the *General Index of Reference*.—With the same view, it has been recommended to filter turbid wine through fine sand laid on a sieve; but, as the mucilage of the foul liquor speedily fills up the interstices, the following method may be preferably employed: it consists simply in showering such sand on the wine, through a sieve; so that the weight of this mineral may carry along with it, and deposit all the mucilaginous and gross particles

ticles of such wine. Should, however, any matters accidentally remain, Dr. DARWIN directs a little gum-arabic, or a few whites of eggs, to be added; after which the *sand-shower* is to be repeated, till the fluid become perfectly clear.

The *colour* of wines is, in general, independent of their properties; being in many instances *artificial*, and imparted to those liquors, after they have come into mercantile hands. Thus, white wines are tinged *red*, by decoctions of logwood, the juices of elder and bilberries; in France, by the husks of tinged grapes; and, when a proper colouring matter is required, solutions of stick-lac, and turnsol, have been proposed as useful substitutes. There are, however, other ingredients frequently employed by unprincipled persons; and which produce deleterious effects on the human system. As it is of great importance to expose such adulterations, we shall communicate a few simple means, by which they may be discovered, both by the taste, and by the eye. Thus, if new *white* wine be of a sweetish flavour, and leave a certain astringency on the tongue; if it have an uncommonly high colour, which is at the same time disproportionate to its *nominal* age, and to its real strength; or, if it have an unusually pungent taste, resembling that of brandy, or other ardent spirits, such liquor is generally sophisticated.—Farther, when *red* wine presents either a very *pale*, or a very *deep* colour; or possesses a peculiarly tart and astringent taste; or deposits a thick crust on the sides or bottoms of glass-vessels, it has then probably been coloured with some of the substances above

mentioned; and which may be easily detected, by passing the liquor through filtering paper; where the tinging matters will remain on its surface. Such fraud may also be discovered, by filling a small phial with the suspected wine, and closing its mouth with the finger: the bottle is then to be inverted, and immersed into a bason containing pure water; when, on withdrawing the finger from its aperture, the tinging or adulterating matter will pass into the water, so that the former may be observed sinking to the bottom, by its greater weight.

Wines frequently become tart, and even sour, in consequence of the fermentation having been mismanaged; or, by keeping them in improper places; or from unforeseen accidents: in these cases, cyder, or the juice of carrots and turnips, is commonly mixed with the liquor, to overcome its acidity; but, as such juices do not always sweeten the wines to a sufficient degree, the latter are often adulterated with *alum*, or with *sugar of lead*; preparations, that cannot fail to be productive of the worst effects; as they doubtless are *slowly operating poisons*. Hence we deem it our duty to give an analytical account of the principal *tests*, or *test-liquors*, discovered by ingenious chemists; both for the health and satisfaction of our readers.

If wine be adulterated with *alum*, M. BERAUD directs a small quantity of the suspected liquor to be mixed with a little lime-water: at the end of 10 or 12 hours, the compound must be filtered; and, if crystals are formed, it contains no *alum*; in the contrary case, the residue, after filtration, will split
into

into small quadrilateral segments, that will adhere to the paper on which it is spread.

In order to detect the *litharge*, or *sugar of lead*, 10 or 12 drops of a solution of yellow ORPIMENT and quick-lime should be poured into a glass of wine: if the colour of the fluid change, and become successively dark-reddish, brown, or black, it is an evident proof of its being adulterated with lead.—As orpiment, however, contains a large proportion of ARSENIC, it is apt to produce effects equally fatal with those resulting from the sugar of lead: we shall, therefore, subjoin a few other tests, which are perfectly harmless. Thus, FOURCROY ("History and Memoirs of the Royal Academy of Sciences at Paris, for the year 1787," &c.) directs a few drops of vitriolic acid, or of pure saccharine acid, to be introduced into a certain portion of the suspected liquor. These will cause the lead to sink to the bottom of the glass, in the form of a white powder; which, if laid on a piece of solid charcoal, may be reduced to metallic globules, by means of the lamp and blow-pipe. Nevertheless, he preferably recommends a solution of hepatic gas in distilled water: this, he observes, will, on being added to wine sophisticated with lead, produce a black sediment, and thus shew the smallest quantity of that metal; whereas, in pure wine, no precipitation will take place:—the precipitate of lead may be readily distinguished from that of other minerals, by its deep colour.

Dr. WATSON ("Chemical Essays," vol. iii.) advises 1 oz. of quick-lime, and half an ounce of flowers of sulphur, to be boiled in one pint of water: when the liquor

is cold, it must be carefully bottled up; and, on adding a few drops to the wine, or cyder, impregnated with lead, the colour of the whole will become of a lighter or deeper brown, according to the quantity held in solution. But, as this test also precipitates iron, when dissolved in any vinous fluid, we think the following *probatory liquor* may be preferably employed: it was invented and published in 1791, by Dr. HAHNEMANN, but the merit of his claim has lately been assumed by an obscure German chemist in London; and we understand, that the recipe for this test has been surreptitiously sold to a French speculator, on whose account it is now retailed by several venders, under his directions. Dr. H.'s original test has, within the last three or four years, been simplified and improved; so that it is now prepared in the following manner:—Let one dram of the dry liver of sulphur, and two drams of cream of tartar be shaken in two ounces of distilled water, till the whole become saturated with hepatic gas: the liquor must now be filtered through blotting-paper, and kept in a phial closely stopped.—In order to try the purity of wine, from 16 to 20 drops of this test are to be poured into a small glass: if the wine become only turbid, with white clouds, and a similar sediment be deposited, it is then not impregnated with any metallic ingredients. Should it, however, turn muddy or black; its colour approach to a deep red; and its taste be at first sweet, and then astringent; the liquor certainly contains the sugar, or other pernicious preparation of lead. The presence of iron is indicated by the wine acquiring a dark-blue cast, similar

to that of pale ink ; and, if there be any particles of verdigrease or copper, a blackish-grey sediment will be formed.—In making all these experiments, the test ought to be newly prepared, and the trials made in the open air.

A small portion of *sulphur* is always mixed with white wines, in order to preserve them : but, if too large a quantity be employed, the wine thus impregnated becomes remarkably intoxicating ; oppresses the organs of breathing ; and excites intense thirst ; while cutaneous eruptions, palpitation of the heart, gout, and numerous other nervous affections, are often induced. Sulphur may, however, be easily detected : for, if a piece of an egg-shell, or of silver, be immersed in the wine, it instantaneously acquires a black hue.—Quick-lime is also frequently mixed with wine, for imparting a beautiful deep-red colour : its presence may be ascertained, by suffering a little wine to stand in a glass, for two or three days ; when the lime, held in solution, will appear on the surface, in the form of a thin pellicle or crust.

The last, and certainly the least hurtful, adulteration of wine, is that with water, which may be detected by throwing into it a small piece of quick-lime : for, if the lime be slacked, the wine must have been diluted ; as, on the contrary (which, however, will seldom be the case), such liquor may be considered as pure.

Wine forms an extensive article of commerce : numerous statutes have therefore been enacted, for regulating its importation ; various duties have been imposed ; and such liquor has been subjected to the excise ; but, as these chiefly

concern *wine-merchants*, and as a detail of them would extend this article to an undue length, we shall not specify the different duties, but conclude with stating the properties of this favourite beverage.

The moderate use of wine certainly conduces to health, especially in weak and languid habits : hence it has been emphatically termed the “ milk of the aged : ” it accelerates the circulation ; invigorates both the bodily and the mental faculties ; increases the action of the stomach ; and is of essential service to convalescents, especially to those who are recovering from the severe attacks of typhus, or other malignant fevers. On the other hand, intemperance in wine is productive of DRUNKENNESS, or INTOXICATION, with all their attendant evils ; and not unfrequently lays the foundation both of acute and of chronic disorders : the mental powers are impaired ; and lingering death only terminates the sufferings of the debauchee.—Hence, we seriously advise parents, to beware of giving wine to their children *indiscriminately* ; because, to them, it can be of service only when taken as a medicine : and those injudicious persons, who encourage young people to take wine *habitually* at their meals, are guilty of an abuse, which cannot be easily repaired, by future abstinence.

WINNOW, or more properly, WINNOWING-MACHINE, is a contrivance, employed for separating, by an artificial current of air, the chaff from the grain, after it has been thrashed out of the straw.

In the year 1797, a patent was granted to Mr. W. S. DIX, for his invention of a winnowing-machine, designed to clear grain from the straw, instead of thrashing.—It consists

consists of an upright square frame, furnished with a hopper for receiving the corn, *while in the ear*: the grain is separated from the chaff, by means of the friction of a large circular rubber. The implement is set in motion by a pair of ribbed rollers, connected with the main axle, by a band or strap; and this axle is turned by the aid of a common hand-winch.

The advantages resulting from the use of this contrivance, are by the patentee stated to be as follow:

1. No grain will be scattered; and the farmer will be enabled to carry in one waggon, *ten times* more corn in the ear, in sacks, and *without* the straw, than possibly can be conveyed *with* the straw, at one load.

2. As the same quantity of corn may thus be conveyed in one day, as is usually performed in ten, it follows, that not only *nine* days labour, both of men and cattle, may be saved, but also the risk of wet weather, which frequently injures the grain, and increases the expence of housing, is in this manner effectually avoided.

3. The corn being in the ears without the straw, and such ears being rough, it will lie *lightly*, so as to admit a free current of air: hence, *sweating* and *shrinking* of the grain will be prevented; which accident often happens, when managed according to the prevailing method.

4. The ears of corn, thus separated from the straw, will occupy incomparably less room in the barn; consequently farmers will be enabled to guard it more completely from the depredations of rats, mice, and other vermin.

5. The *reed*, or prime straw, being thus preserved in a sound state,

will be more fit for thatching, collar-making, the manufacture of hats, &c. for it is neither broken nor split, as generally happens when the flail is employed: at the same time, all the *natural* chaff remains in an integral state for feeding cattle.

Lastly, every grain is by means of such contrivance separated from the ears: thus, the advantages of a thrashing and winnowing machine are combined; and Mr. DIX is of opinion that every farmer, who adopts the various methods proposed in the specification of his patent, will find an increase of produce, far exceeding the most sanguine expectations.

It is, however, to be justly apprehended, that most agriculturists who are already provided with large barns, and who are accustomed to submit their corn to the action of the flail, in the manner of their forefathers, will not be disposed to introduce *new* methods, unless convinced of their superiority, by the most decisive result of experience. And, as we cannot, in this instance, produce vouchers to attest the excellence of Mr. DIX's plan, we decline entering into any examination of its merits:—for the satisfaction of our country-readers, therefore, we shall lay before them (in the Supplement to this volume) a description and delineation of a simplified *Winnowing Machine*; the drawing and engraving of which, could not be procured in due time for the present Number.

WINTER-CRESSSES; or Winter-Rocket. See MUSTARD, the Hedge.

WIRE, is a cylindrical piece of gold, silver, copper, iron, or other metal, forced and drawn through
Z 2 holes

holes of an iron frame: it is made of various sizes, according to the purposes for which it is designed.

Although considerable quantities of this article are manufactured in Britain, yet they are inadequate to supply the market: hence, it becomes necessary to import large parcels of wire, which is subject to various duties. Thus, *brass* and *copper-wire* pays the sum of 2l. 17s. 5½d. per cwt.: *iron-wire*, 3l. 3s. 0½d. per cwt.: *latten-wire*, 2l. 18s. 3½d. per cwt.: *steel-wire*, 11d. per lb.: *virginal-wire*, if of brass or copper, 8l. 1s. 7½d. per cwt.; but, if it be made of iron, it is subject to the charge of 8l. 2s. 9½d. per cwt. By the 10 ANN, c. 26. §. 65; the 15 GEO. II. c. 20; and the 22 GEO. II. c. 36, gold and silver wire is prohibited to be imported, on pain of forfeiting the goods, and incurring a fine of 100l. The stat. 13 and 14 CAR. II. c. 19, also prohibits the importation of *card-wire*, or iron-wire employed in making *wool-cards*, on forfeiting the goods or their value: and, if any wire, smaller than *fine-fine*, or superfine, or any wool-cards, or other wares made of iron-wire, be imported, excepting from Ireland, they are liable to be seized.

WITHEN-TREE. See SALLOW.

WITHERS, a term in farriery, denoting the juncture of the shoulder-bone, at the bottom of the neck and mane.—This important part of the horse's body, is liable to bruises, generally occasioned by a narrow saddle; frequently forming imposthumes; and, if improperly treated, becoming fistulous.

On the first appearance of the swelling, it should be bathed with hot vinegar, three or four times in the day: but, if this fomentation

be insufficient to disperse the tumor, an ounce of oil of vitriol may be added to a quart of vinegar, or half an ounce of white vitriol dissolved in a small portion of water, may be mixed with the former liquid, and the compound be applied to the part affected.—If the swelling be attended with pain, heat, and small watery pustules, it ought to be bathed with the following preparation:—Take 2 oz. of crude sal ammoniac, and boil it in a quart of lime-water: when it has subsided, pour off the decoction, and add to it half a pint of spirit of wine; after which, the tumor should be dressed with linseed oil, or elder-ointment, in order to soften the skin.

In critical swellings, however, repellents should, on no account, be resorted to; but it will be proper to apply suppurating poultices. Experienced farriers advise, never to open these tumors till they spontaneously burst; as otherwise the excoriation will become spongy, discharge a bloody ichor, and speedily degenerate into a foul ulcer. Where fungous flesh happens to be troublesome, and the matter discharged is of a yellow colour, and an oily, viscid, consistence, pledgets soaked in the following composition have proved very successful: Dissolve half an ounce of blue vitriol in a pint of water; add oil of turpentine, and rectified spirit of wine, each 4 oz.; white-wine vinegar 6 oz.; oil of vitriol, and oxymel of verdigrise, each 2 oz.—Farther, let the tumefied part be washed with a mixture of spirit of wine and vinegar. But, when the cavities of the wound are fistulous, the callosities must, if practicable, be excoriated

terminated with a knife, and the remainder destroyed by escharotics.

WOAD, or *Isatis*, L. a genus of plants comprehending 6 species, of which only the *tinctoria*, or Wild Woad, is a native of Britain. It is biennial; grows in corn-fields, principally at New Barns, in the Isle of Ely; where it flowers in the months of June and July. The stalk attains a height of from 3 to 4 feet; and the leaves are eaten by cows, but refused by horses, goats, and sheep: these leaves are highly valued by dyers, for the beautiful blue colour which they impart to wool; hence, this vegetable is cultivated to a considerable extent.

Woad prospers in a deep fat loam, though a moderately rich and mixed soil is the most proper: as this plant remarkably exhausts the ground, more than two crops should never be taken in succession. The land ought to be ploughed four times; first, shortly before the winter; a second time in the spring, when it will be advisable to form the ridges; a third time in June; and, lastly, towards the end of July, or early in August: in the intervals between each ploughing, it will be necessary to harrow the soil, so that all weeds may be destroyed.

Woad, in this country, is sown early in August, and generally broad-cast, though the drill-husbandry is the most advantageous. At the end of two or three weeks, the plants must be hoed, at the distance of at least six inches; after which they will require no farther attention, except a careful weeding in October, and particularly in the month of March.

The proper time for gathering the leaves, is determined by their full growth, and the first change of

colour at their points: they are cut with an edged tool, and collected into baskets by women and children. If the land be good, three or four successive crops may be taken; but the two first are the finest, and produce from 25l. to 30l. per ton; whereas, the third or fourth do not sell for more than 7 or 8l. per ton. After the leaves are gathered, they are submitted to the action of mills, similar to those employed for grinding oak-bark; and in which they are reduced to a kind of pulp. The woad is then laid in small heaps, which are closely and smoothly pressed down. As often as the crust, formed on the outside, cracks or separates, it is again closed, to preserve the strength of the colouring matter. In this state, it remains for a fortnight; at the expiration of which, the heaps are broken up; the external part is worked into a mass; and the whole is formed into oval balls, either by the hand, or by means of moulds. The balls are now exposed to the sun, under shelter: when perfectly dry, they are ready for sale; or are prepared for the vat, in the manner stated vol. ii. p. 202.—Such is the process which woad undergoes, before it becomes fit for dyeing blue colours; but M. ASTRUC is of opinion, that, if this vegetable were cured in the same manner as indigo, it would produce a colour of equal lustre to that obtained from such expensive foreign drug. Thus, considerable sums of money, that are annually exported for indigo, might probably be saved; a conjecture which is now corroborated by the test of experience.—DAMBOURNEY directs to boil the fresh leaves of woad with diluted bullocks' blood, or more effectually

with caustic soap-bollers' ley: in this simple manner, a dark-green decoction of a blueish shade will be obtained; and, after clarifying the liquor, it will form a blue precipitate; which, dissolved in oil of vitriol, and properly diluted, imparts a beautiful colour to woollen cloth. Farther, even the leaves, in a state of fermentation with pure water, on adding a small portion of a caustic alkaline ley, afford a fine blue sediment, resembling the true indigo.

WOLF'S-BANE, the **LARGE BLUE**, or **MONK'S-HOOD**, *Aconitum Napellus*, L. is an exotic perennial, growing wild in the mountainous parts of Switzerland and France.—The juice of this plant possesses a disagreeable smell, and an acrid taste: of the latter, however, it is in a great measure divested by inspissation. Being one of the most active vegetable poisons, when taken in large portions, it excites sickness, vomiting, diarrhoea, giddiness, delirium, fainting, cold sweats, convulsions, and death.

DR. STORCK, of Vienna, informs us, that the Wolf's-bane is a very effectual remedy in glandular swellings, the itch, amaurosis, in gouty and rheumatic pains, intermittent fevers, and in convulsions. He prescribed 10 grains of the powder to be taken at night, and in the morning; but the dose is to be gradually increased to 6 grains of the inspissated juice, twice every day. Other physicians have employed a tincture prepared of one part of the dry, pulverized leaves of this herb, and six parts of spirit of wine; in doses of 40 drops.—In Britain, however, this remedy has not answered the high expectations formed of its virtues; though

it doubtless is a very active, and useful medicinal plant, if duly prepared, and regularly prescribed.

A decoction of the roots of the Wolf's-bane, affords an efficacious liquor for destroying *bugs*:—if this root be reduced to powder, mixed with oatmeal and honey, or any other palatable vehicle, and thus exposed to rats or mice, it will corrode and inflame their intestines, so as speedily to prove a fatal repast.—The juice expressed from this plant, is occasionally poured on flesh, and thus employed as a bait to allure wolves, foxes, and other beasts of prey.

Lastly, it is remarkable, that the best antidote for the poison of the Monk's-hood, is asserted to be the root of the *anthora*, a species of the same genus, called *healthful*, or *wholesome Monk's-hood*.

WOLF-FISH. See **SEA-WOLF**.

WOLVES-TEETH, in farriery, frequently occur in old horses, when the upper bones of the month considerably project over the lower ones: thus, the almost only inconvenience resulting from this circumstance is, that the points of the teeth prick, and lacerate, either the tongue or gums, and thus distress the animal when feeding.—In order to remedy such defect, the superfluous prominences, or unequal points of the teeth, may be filed down; by which simple expedient, these useful bones will be reduced to their natural size.

WOLVERENE. See **BEAR**.

WOOD, denotes the fibrous substance, of which the branches, trunks, and roots of trees, are principally composed.

Having already stated the most approved methods of seasoning wood, under the article **TIMBER**, we shall at present direct our attention

tention to the most advantageous expedients that have been devised for preserving this useful substance; and conclude with an account of the best modes of imparting to it different colours.

To render timber more durable, it has been recommended to saw the trees into scantlings; or, where the wood is designed to be used entire, to hew it into the requisite shape; when it is to be laid in a bed of sand (contained in a case or shell of brick-work) and heated by means of a furnace, built beneath. As soon as the wood becomes hot, the sap exudes, and is imbibed by the sand; in consequence of which, the quality of the timber is greatly improved. This method has been successfully tried; but, as it is too expensive, Dr. Lewis advises all wood, that is exposed to the inclemency of the weather, to be coated with a preparation of pulverized pit-coal and melted tar, reduced to the consistence of paint, which he has found very efficacious. In those cases, however, where piles, or other masses of timber, are subject to the action of water, the most simple mode of preserving it, is that employed in the Bermuda Islands, and other parts of America. It consists in covering such wood repeatedly with train or whale-oil, allowing each coat to become perfectly dry, before another is applied.—For preventing the combustion of wood, the reader will consult the article FIRE-PROOF.

Mahogany, ebony, and the finer woods, being very expensive, artisans have contrived various preparations for tinging timber, so as to be with difficulty distinguished from them. Thus, ebony may be imitated, by boiling clean,

smooth box in oil, till it become perfectly black; or, by washing pear-tree wood, that has been previously planed, with aqua-fortis, and drying it in a shady place, in the open air; after which, writing-ink must repeatedly be passed over it, and the wood dried in a similar manner, till it acquire a deep black colour. It may then be polished with wax and a woollen cloth, which will give it a fine lustre.

In the new "*Transactions of the Royal Society of Göttingen*," Prof. BECKMANN has published the result of numerous experiments, relative to the staining or dyeing of wood. He directs, for instance, a piece of plane-tree to be put into a glass vessel, containing pulverized dragon's-blood mixed with oil or turpentine, and placed over the fire: in a short time, the wood will acquire a beautiful colour, resembling that of mahogany; and the dragon's-blood, adhering to the surface, may be separated by applying rectified spirit of wine. If gamboge be dissolved in spirit of turpentine, it will impart a bright-yellow colour; and one part of dragon's-blood, with two of gamboge, communicate various shades to the wood of the beech and plane-trees. A fine walnut-tree tint may be obtained, by rubbing common wood with a mixture, prepared of the bark of the trees, or the shells of walnuts, previously dried, pulverized, and reduced to a proper consistence with nut-oil.

Another preparation for communicating a perfect mahogany-colour to inferior woods, especially those of the elm, maple, and sycamore-trees, consists of the following ingredients: Dissolve two drams of dragon's-blood, one dram of wild alkanet (*Anchusa tinctoria*, L.), and

half a dram of aloë, in half a pint of rectified spirit of wine. Previously to using this tincture, the wood ought to be moistened with aqua-fortis; when two or three coats of the former, each being allowed to dry before the next is applied, will be sufficient to produce the desired effect.

In March, 1778, a patent was granted to Mr. HUMPHREY JACKSON, for his method of beautifying, and preserving the colour of every kind of wood, by means of a stain, varnish, and powder. He directs the substance first to be polished with the following composition:—Take pumice-stone and burnt alum, of each equal parts; lapis calamiaris, and green-vitriol calcined to redness, of each half a part; let the whole be reduced to a fine powder, and rubbed with a woollen cloth on the wood, till it acquire a fine polish: the stain must now be prepared as follows:—Let 6 lbs. of stick-lac be boiled in three gallons of water, till the colour be extracted, when the liquor ought to be strained: half a pound of madder-root is also to be boiled in three quarts of water; next, half a pound of cochineal, a similar quantity of kermes, and 4 oz. of clean scarlet-rags, are to be digested in a glass vessel, containing one gallon of spirit of wine, and a solution of 2 oz. of pearl-ash in half a pint of water, till all the tinging matter be combined with the liquor. After straining it, the decoction of stick-lac must be added, and a sufficient quantity of aqua-fortis be mixed with the whole, to impart a proper red colour; when the compound may be laid on with a brush.—In order to prepare the varnish, the patentee directs one pound of clear white amber, half

a pound of copal, a similar quantity of spirit of turpentine, as well as of the oils of rosemary, and lavender; and six pounds of nut-oil, to be digested in a sand-heat, till the oils acquire the consistence of syrup: the liquor is now to be strained for use; and, when the varnish becomes clear, it must be applied to the stained wood with a painter's brush; after which it should be suffered to dry.

A patent was likewise granted, in November, 1791, to SAMUEL BENTHAM, Esq. for his invention of a method of planing wood.—Our limits will not admit of an analysis of his diffuse specification: we shall therefore only state that, by his contrivance, the operation of planing is simplified to such a degree that animals, steam, water, machinery, and other brute or inanimate agents, may be advantageously employed.—A minute account of his patent is inserted in the 5th vol. of the "*Repertory of Arts*," &c.

Various other methods of staining wood *blue, green, purple, red* and *yellow*, are practised by artificers. Of these, we shall communicate only the most expeditious, and least expensive.

BLUE:—Take 2 drams of the best indigo reduced to a fine powder; put it in a glass with 2 oz. of oil of vitriol, and agitate them with a new clay-pipe.—After standing 10 or 12 hours, at the farthest, in a temperate place, pour it into a large glass vessel, or china bowl, and add such a portion of pure water as may be expedient to give it the tint required.—Those, to whom the saving of time is an object, may purchase this staining liquor ready prepared, from the dyer. Another mode of tinging wood

wood blue, is that of dissolving verdigrease in distilled vinegar; then making a separate solution of 2 oz. of pure pearl-ashes in a pint of water: the former liquid should be first repeatedly applied to the surface of the wood, till it be of a sufficiently deep green colour; when the latter preparation must be drawn over it, with a soft painter's brush, as often as may be necessary to change it to a proper blue cast.

GREEN:—Dissolve purified verdigrease in distilled vinegar, or in aqua-fortis diluted with 15 or 20 times its weight of water, and apply the solution to wood previously warmed.

PURPLE:—Take 1 oz. of log-wood, and 2 drams of Brazil-wood; boil them together in a quart of water, slowly, over a moderate fire: when one-half of the fluid is evaporated, it must be strained, and several times laid on the wood, with a proper brush, till it have received a dark-red shade. Thus prepared, and being allowed to become perfectly dry, it may be changed to a fine purple shade, by drawing over it repeatedly a weak solution of the purest pearl-ash, namely, one dram in a pint of water. Some dexterity, however, must be exerted on this occasion; as, by too sudden and frequent applications of either of the two liquids, the colour is very apt to assume a dark blue, instead of a purple shade.

RED:—Take 2 oz. of Brazil-wood, and 2 drams of purified pot-ash; mix them with a quart of water; and let the composition stand in a warm place for several days; stirring it occasionally.—When sufficiently extracted, the coloured liquor must be decanted,

moderately warmed, and in that state applied to the wood as many times as may be deemed necessary for giving it a more or less bright cast. Next, a solution of alum, in the proportion of 2 oz. to a quart of water, is to be laid on the wood (while it is still wet from the former stain) with a soft brush, or other instrument.—After polishing the articles thus stained, their colour may be rendered still more beautiful and permanent, by giving them one or more coats, with a varnish prepared of shell-lac.

YELLOW:—This delicate tint may be easily imparted to wood, which is naturally white: for this purpose, take 1 oz. of pulverized turmeric, and a pint of rectified spirit of wine; shake them in a glass bottle; allow the infusion to stand for several days, closely covered: then decant the liquor, and lay it on the wood repeatedly, as may be found necessary.—A cheaper method, however, consists in applying weak aqua-fortis to wood previously warmed, and immediately after the stain is given, holding it to the fire, at some distance, till it acquire the desired cast. But it should be remarked, that the aqua-fortis must be sufficiently diluted with water; as, otherwise, the wood is apt to acquire a brown or blackish hue. In order to improve the articles thus stained, the same expedients may be adopted, as those suggested in the preceding paragraph.

To conclude:—As it is frequently an object of some importance, to close and secure the chinks, flaws, or other accidental defects in wooden vessels, in the most expeditious manner, we conceive that a tough paste, composed of whiting, a solution of gum-

gum-arabic or tragacanth, and a proper quantity of oak-bark reduced to a fine powder, may be advantageously applied to tubs or casks, with a view to prevent farther leaking. But, on such occasions, it will always be more advisable to empty the vessels; and, after drying them, to use a cement, consisting of pitch, bullocks' blood, linseed-oil, turpentine, and the finest brick-dust, melted together in an iron pan: before, however, this powerful lute be laid on, all the crevices or chinks ought to be properly caulked, or filled up with tow or oakum.

WOOD-ASHES. See ASHES.

WOOD-BINE. See HONEY-SUCKLE, the Common.

WOOD-COCK, or *Scolopax rusticola*, L. a bird of passage, generally appearing in England toward the latter end of October, and retiring early in March.—It is about 14 inches in length, and, with expanded wings, 26 in breadth; the crown of the head, hind-part of the neck, back, and coverts of the wings, are beautifully marked with ferruginous red, black, and grey colours; though the breast and belly are barred with numerous transverse lines of a dusky hue.

Wood-cocks, on their first arrival, take up their residence in copses of 9 or 10 years growth; but seldom continue in one place longer than 12 or 15 days. They subsist on worms and insects, which their long bills enable them to extract from soft grounds, and moist woods. In the evening, these birds repair to pools and springs, whence they retire to open fields and meadows, for the remainder of the night. The sportsman may, therefore, with advantage, take his stand in those nar-

row passes on the borders of woods, communicating with streams; or, he may watch these fowls about the close of the evening, near the pools which they frequent.

As an article of food, the woodcock affords, to the luxurious, one of the most delicious dishes: its flavour is considered superior to that of the PARTRIDGE.

WOOD-LOUSE. See SLATERS.

WOOD-PECKER, or *Picus*, L. a genus of birds comprising 10 species; 4 of which are frequently met with in Britain: the following of these are the most remarkable.

1. The *viridis*, or Green Woodpecker, is about the size of a thistle; of a greenish-yellow shade; and feeds entirely on insects: its principal employment consists in climbing up and down the trunks or boughs of trees, which it perforates with such exactness, as if the holes were made with human art. After having sufficiently excavated an unsound tree, the female deposits 5 or 6 semi-transparent, white eggs; and the young brood are taught to ascend and descend trees, before they are able to fly.—These active birds are said to occasion great havoc among bees, in the winter season.

2. The *minor*, or Least-spotted Woodpecker, scarcely weighs one ounce, being only about 6 inches in length, and 11 in breadth: it is likewise a formidable enemy to bees:—in the winter, this bird frequents orchards, whither it resorts for the purpose of picking up the larvae of caterpillars, and other insects. It also builds its nest in holes of trees, previously scooped out with its penetrating bill; and is known in some parts of England, by the name of *hickwall*.

Wood-

Wood-peckers, though eaten by the Italians, do not form an article of food at the British tables.

WOODROOF, the *SWART*, or *Asperula odorata*, L. an indigenous perennial, growing in woods and shady places; where it flowers in the month of May.—This plant possesses an exceedingly grateful odour, that increases on being moderately dried: it has a sub-saline, and somewhat austere taste; which, together with a peculiar, fine flavour, it also imparts to vinous liquors.—According to LINNÆUS, the smell of this herb, expels ticks, and other insects.

The sweet woodroof is supposed to attenuate viscid humours, and strengthen the bowels; to remove obstructions of the liver and biliary ducts; and was formerly esteemed a medicine of great efficacy in epilepsies and palsies.—The plant is eaten by cows, horses, sheep, and goats; having the remarkable property of increasing the milk of animals, and especially of those first mentioned.—See also *TEA*; p. 194.

WOOD-SAGE. See *WOOD-GERMANDER*.

WOOD-SORREL. See *SORREL* the Common Wood.

WOOD-WAXEN. See *DYER'S-GREENWEED*.

WOODY-NIGHTSHADE. See *NIGHTSHADE*.

WOOL, in general, signifies the hairy substance which forms the covering of *SHEEP*.

The growth of wool is always completed in one year, when it spontaneously decays, and is naturally renewed; in which respect it resembles the hair of most of the lower animals; though that of sheep is considerably finer, and grows with more uniformity, each

filament advancing at an equal distance; separating from the skin nearly at the same time; and, if it be not previously shorn, it falls off naturally; the animal being already provided with a short coat of young wool, that undergoes similar changes in the subsequent year. Another circumstance, that distinguishes wool from hair, is its various thickness in different parts of the same sheep; being closer at the points than at the roots; and the part, which grows during the winter, being considerably finer than that produced in the summer.—Next to Spanish wool, the English sheep furnish the most valuable commodity of the kind in Europe.

Wool, when first shorn, is called a *fleece*, and every fleece is divided into three kinds, namely: The *prime* or mother-wool, which is taken from the neck and back; the *seconds*, or that of the tails and legs; and the *thirds*, which is obtained from the breast, and beneath the belly.

The finest and most esteemed sorts of British wool, at present, are those obtained from the Ryeland, South-Down, Shetland, Cotswold, Herefordshire, and Cheviot-sheep; and, as this article forms the most extensive staple commodity of British commerce, various and successful attempts have lately been made to improve its quality. To effect this desirable object, recourse has been had to intermixing or crossing the different breeds; and, by the patriotic exertions of the British Wool Society, the Board of Agriculture, Lord SOMERVILLE (see p. 62, of the present volume), and Dr. PARRY, the British wool is now little inferior to the best kind imported from Spain.

Our

Our limits not permitting us to detail the results of their useful and interesting experiments, we shall only remark, that those who are about to select a flock of sheep, whether for fattening, or chiefly on account of their wool, should not venture to purchase any animals without the assistance of an eminent wool-stapler; for such person, being conversant with the different qualities of wool, is doubtless better enabled to form an accurate judgment, than could be expected from any farmer or agriculturist. Besides, the situations to which sheep have been accustomed, ought to be carefully investigated. Those, for instance, which have been habituated to hilly or mountainous pastures, should not be removed to a verdant plain: nor must the reverse plan ever be adopted; for it is not the gigantic size that constitutes the value of sheep, but an ability to withstand the seasons, together with a disposition to fatten *kindly*, and to produce the largest quantity of fine wool, in poor lands. It is principally by attending to the *natural* habits of this noble animal, that the Spanish wool has acquired such celebrity. But, as a complete account of the management of sheep in Spain, would exceed the limits of this work, we shall only recommend to the consideration of our country readers, *three* remarkable circumstances, to which the superiority of Spanish wool is generally, and we believe justly, attributed.

The *first*, is the use of SALT; which, being spread on small tiles or slates, the animals are driven among them, and permitted to lick them at pleasure; though, when sheep depasture on lime-stone walks, no salt is required. Thus,

all acidity in the stomach is corrected: as, however, the prohibitory duty on that article cannot fail to prove a material obstacle to its more general consumption for such useful purpose, Lord SOMERVILLE proposes chalk to be substituted; and he judiciously remarks that, as this fossil corrects acidity in calves, it may, with equal advantage, be given to sheep.

Secondly, In the month of September, red or yellow ochre is, by the Spaniards, constantly rubbed into the wool, with which it incorporates; and, while it qualifies the perspiration of the animals, that would otherwise impart a harshness to the wool, it forms a covering alike impenetrable to heat and cold.

The *third*, and most important, cause of the excellence of Spanish fleeces, is the rigorous observance of the *mesta*, or Code of Sheep-laws; in obedience to which, the climate must be changed according to the season, so as constantly to preserve an equal temperature. Thus, the flocks are never turned out of the fold to feed, till the morning dews have evaporated; because these are extremely prejudicial to the health of sheep, and frequently produce the rot of the liver, and also the foot-rot. Farther, these animals are regularly *sweated*, one or two days previously to shearing, in order to make the wool separate more readily; and are likewise carefully housed (particularly if the weather be cold or rough) for several nights after they have been shorn; a management which, if it be essential to the prosperity of sheep in the more temperate climates of Spain, is absolutely necessary in Britain.—Those of our readers, who wish to investigate this important subject, will

will meet with numerous and valuable hints relative to wool, in Lord SOMERVILLE's "*System followed during the Two last Years by the Board of Agriculture*," &c. 1800; also in the 2d vol. of "*Communications to the Board of Agriculture*;" and, lastly, in Dr. PARRY's "*Facts and Observations tending to shew the Practicability and Advantage to the Individual and Nation, of producing in the British Isles, Clothing Wool, equal to that of Spain*," &c. 4to. pp. 93. 4s. Cadell and Davies, 1800.

The utility of wool, as a warm and useful clothing (see CLOTH, FLANNEL, &c.); and, when no longer serviceable as a garment, its shreds or rags in the manufacture of SOAP, having already been sufficiently explained, it will be needless to enter into farther detail:—as the various acts of parliament relative to the wool-trade, will not admit of an analysis in this work, we shall conclude with briefly stating the different exclusive privileges that have been granted for dressing, preparing, and manufacturing wool, and woollen cloth.

The following are the principal patents of which specifications have been published, namely:—1. In March, 1787, Mr. JOHN HARMAR's, for a machine designed to raise a shag on woollen cloth:—2. Mr. GEO. JEFFREY's, in March, 1791, for a new method of dyeing stuffs, and woollen cloths, of various colours:—3. The Reverend EDMUND CARTWRIGHT's, in May, 1792, for a machine designed to comb wool:—4. Messrs. HENRY WRIGHT and JOHN HAWKINS, in June, 1793; for their invention of certain machinery, that may be employed in combing, dressing, and preparing

wool.—And 5. Mr. THOMAS CONNOR's, in January, 1795; in consequence of his newly invented machine for batting wool.—These various contrivances, however, being too complex to admit of plain descriptions, the inquisitive reader will consult the 1st, 2d, 3d, 8th, and 12th volumes of the "*Repository of Arts*," &c.; where full specifications are inserted, and illustrated with several engravings.

WOOLLEN CLOTH. See CLOTH.

WORK. See LABOUR.

WORK-HOUSE. See POOR-HOUSE.

WORMS, are the meanest of the lower animals. Those which infest the bowels of the human body, are generally divided into three kinds, namely, 1. the *ascarides*, or small round and short white worms; 2. the *teres*, or *lumbicus*, a round and long worm; and, 3. the *taenia*, or tape-worm.—Having already treated of the first and third kinds, under their respective heads, we shall now give an account of the second, or round worm.

Symptoms of Worms:—Paleness of the face; itching of the nose; dilatation of the pupil; grinding of the teeth during sleep; voracious, or bad appetite; fetid breath; nausea, while the belly is mostly inflated, hard, and painful. Eruptions often appear, particularly on the face: and, in the morning, the patient is affected with a copious flow of saliva, and an uncommon craving for dry food, such as bread, potatoes, &c.

The manner in which worms originate in the human body, is not yet ascertained; but, in general, it has been observed, that they are found principally in persons and children of a weak and relaxed digestion; in such as eat great quantities

tities of fruit, and raw vegetables; as well as in the inhabitants of the sea-coast. Hence persons, who subsist chiefly on fish, are often troubled with worms.

Cure.—To expel such as already exist in the body, and to prevent their re-production, it will be advisable to administer strong purgatives and tonics.—With the former intention, a variety of medicines have been recommended, and many unprincipled empirics have levied contributions on the credulous; but one of the most efficacious remedies, is a composition of jalap and calomel, when used in the manner directed p. 190 of this volume: the dose should be repeated twice or three times, during the space of a fortnight. On the intermediate days, the patient may use the solution of emetic tartar mentioned in the same page; or a dram of the powder of tin, mixed with honey or treacle, twice in the day. The following treatment has likewise, in many instances, been attended with success. Take of pulverized worm-seed, two drams; jalap, valerian, and Æthiops mineral, of each one dram; mix the whole with a sufficient quantity of treacle, or honey, to form an electuary; of which a tea-spoonful is to be taken twice a day. The operation of these medicines may be considerably increased by clysters, consisting of strong solutions of salt with the addition of oil.

The principal tonics to be used against worms, will be the Peruvian bark, Valerian, and Steel; but none of these active drugs can with safety be resorted to, without proper advice.—The patient's diet should be duly regulated: his beverage ought to consist of cold water, or sweetened with honey,

carefully avoiding new beer, and all fermented liquors.—Coffee, tea, and fat broths, must also be abstained from; but a draught of water, in which crude mercury has been boiled, taken every morning before breakfast, is asserted to be one of the most efficacious diet-drinks.—With regard to solid food, the bread ought to be well baked, and a slice spread with treacle and scraped carrot, garlick, or pulverized wormseed, eaten every morning, has often been productive of good effects. Onions, horse-radish, salted and dried animal food (even sound Dutch herrings, occasionally), as well as spices, and ripe fruit, are here proper articles of food. On the other hand, all such substances as tend to occasion flatulence; especially white cabbage, pease, dried beans; potatoes, and other farinaceous articles; for instance, pastry, confectionary, and whatever is of a fat and oily nature, particularly pork, ham, &c. must be carefully avoided.

Children troubled with worms, should take moderate exercise; and be directed to masticate their food properly. It is farther absolutely necessary, that the motions of their limbs and body should never be constrained by tight garments, particularly those around the belly and hips; as such injudicious practices cannot fail ultimately to impair their digestion.

WORM, the Blind. See vol. i. p. 288.

WORMS, or EARTH-WORMS, in husbandry, are very injurious creatures, especially in corn-fields; where they consume the young roots, and thus destroy the greater part of the crop.

To prevent such depredations, it has been recommended to manure the

the soil with *soot*, or *salt*; or to sprinkle it with sea-water; and, where this cannot be easily procured, with a solution of bay-salt in common water. The brine of salted meat may likewise be employed in gardens; or, if walnut-leaves be steeped in water for a few days, the fluid will acquire such a degree of bitterness, as to prove a certain poison to reptiles of every description.

WORM, the Glow. See GLOW-WORM.

WORM, the Silk. See SILK-WORM.

WORM, the Tape. See TAPE-WORM.

WORMS, in Dogs. See vol. ii. p. 151.

WORMS, in Horses. See BOTTS.

WORMWOOD, the Common. See MUGWORT.

WORMWOOD, the SEA, or SEA SOUTHERN-WOOD, *Artemisia maritima*, L. is an indigenous perennial, growing on the sea-coasts, and flowering in the month of August.—In its wild state, the odour of this plant is similar to that of the *Marum Germander* (see vol. ii. p. 369); or of CAMPHOR; but, when cultivated in gardens, it becomes less fragrant. Its virtues correspond with those of the MUGWORT, or Common Wormwood, though in an inferior degree.

The Sea Wormwood is frequently used as an ingredient in distilled waters: when triturated with fine sugar, it is formed into a conserve.—This marine plant is eaten by horses; but refused by cows, goats, and sheep.

WORT, is an infusion of malt, from which different kinds of ALE and BEER are brewed.

Wort possesses considerable antiseptic properties, and has often

proved an excellent diet-drink, which remarkably promoted the cure of the true SCURVY:—it may also be advantageously used as common beverage, in cancerous ulcers, and in all other cases, where a strong putrid disposition prevails in the fluids.

WOUND, in surgery, is a recent and violent solution of continuity in a soft, external part of the body; being attended with an effusion of blood.—To enter into a full discussion of the different kinds of wounds, as denominated from the parts affected, would exceed the limits of this work: we shall, therefore, first give a short account of wounds in general, and afterwards treat of such casualties, according to their particular situations.

The danger attending a wound, depends chiefly on the part which is injured, and on the constitution of the patient. If, however, the heart, any of the large internal blood-vessels, the spinal marrow, or the brain, be wounded, the assistance of an expert surgeon ought instantly to be procured, as the event generally proves fatal. Similar consequences may be apprehended, when nerves proceeding to the heart, are materially injured.

On the other hand, if the wound be superficial, or what is usually termed a *cut*, in the upper or lower extremities, especially in the muscular part of the arm, hand, finger, or in the leg or foot, it will be advisable immediately to compress the wounded part (without examining its size and dimensions), so as to exclude every access of air, and to prevent the efflux of blood:—next, any tenacious matter, such as glue, shoe-maker's wax, gold-beater's leaf,

leaf, or the common sticking-plaster of the shops, should be speedily applied. Thus artisans, working with edged tools, very properly treat the frequent accidents of this nature: and, though the wound may extend even to the bone, yet it will in this simple manner, be safely and expeditiously healed. Nay, daily experience evinces, that external injuries of the head, neck, breast, &c. may be successfully treated by a similar method, especially by the aid of slips of adhesive plaster; which, in the latter situation, must be applied to the part during the act of *inspiring*; so that it may not be displaced by the alternate expansion and contraction of the muscles in breathing; and that it may prove no impediment in that important process of the animal economy. Where, however, a wounded part has been neglected, and exhibits rough edges; or, if the skin and muscles have been lacerated, a different treatment must be adopted: in these cases, a *pledget* or *lint* dipped in sweet-oil, should be applied to the injured spot, and the whole covered with a piece of fine oil-cloth. After 24 hours, the first dressing may be removed, without tearing or breaking the small fibres adhering to the lint; when the pledget ought to be renewed. On such occasions, a proper bandage will be indispensably necessary, in order to promote the juncture of the lips of the wound; but, in case the latter shew a disposition to suppurate, the use of oil will be hurtful; as the wound must be treated in the manner pointed out, under the article *ULCER*.

In *fresh wounds*, or in severe bruises, the application of cold water is strongly recommended by

NANNOWI, an Italian; and *ARQUEBUSADE* water, by *THEDEN*, the first German surgeon.—*PERCY* advises the following efficacious ointment: Take a small glassful of the clarified juice expressed from the green leaves of the burdock, and a similar portion of almond or olive-oil: these liquids must be duly incorporated in a pewter vessel or mortar, by means of a leaden pestle. Thus, a green ointment will be obtained, which may be spread on lint or soft linen, and applied to the wound every 12 hours, or oftener. This preparation softens the callous edges of the ulcer, and cleanses the latter, while it equally promotes suppuration and cicatrization. If the fungous flesh grow too rapidly, the simple juice of burdock, without the oil, will be preferable. At each dressing, the pledget or lint may be covered with a fresh leaf of the same plant; which may also be laid on the newly formed scar, with a view to render it more firm.—As the unguent above described is in great estimation on the Continent, *Dr. UNZER* adds, that it may be preserved for a considerable time, when kept in a cool place; or, for long voyages, it should be boiled, and allowed to become cold, two or three different times, till it acquire a thick consistence.

M. de KESSEL, a respectable German writer, observes from long experience, that new honey spread on folded linen, affords an excellent remedy for fresh and bleeding wounds, which ought not to be washed or otherwise handled; provided they contain no foreign substances, for instance, glass, splinters, &c. If they happen to be deep, or have large orifices, the honey-plaster should be repeated every

every four or five hours, and after some days, only once in twenty-four.—He farther states, that such application not only stops the bleeding, but also prevents inflammation, swelling, and suppuration, while it checks the growth of fungous flesh.

In all *open wounds*, it is an object of the first importance, that the patient, especially during the act of dressing them, breathe a pure, salubrious air; for, a foul or contaminated atmosphere, such as that of hospitals, and crowded habitations, always increases the danger; so that small, superficial injuries have, from that source, frequently been attended with fatal effects.

Tight bandages often occasion a considerable swelling of the adjacent parts: in such cases, the roller ought to be very gradually removed; as, otherwise, the tumefaction of the compressed places will suddenly increase, and sometimes terminate in mortification. Hence, *PETIT* recommends the bandage to be renewed every three hours, so that it may each time be less tightly fastened.—In wounds which, from their nature, cannot be speedily healed, the use of Goulard-water, or other preparations of lead, is extremely improper; as they should, from their commencement, be dressed with suppurating remedies. Hence, in all cases of febrile heat, and external inflammation, emollient poultices, composed of the crumb of bread boiled in milk, must be instantly applied, and changed several times in the day; or, as often as they become cold, without disturbing or touching the wounded part with the fingers.

In order, if possible, to obviate the symptoms of inflammation, it

will, in some instances, be advisable to draw blood from a vein of the arm or foot; to resort to opening medicines, such as neutral salts, with a few grains of nitre; to apply similar clysters; and, on the whole, to observe a cooling regimen. Such treatment is particularly necessary, in consequence of stabs or cuts given with sharp-pointed or edged instruments, and in other wounds proceeding to interior parts. Hence, *TISSOT* remarks, that persons who had been dangerously wounded in the chest, in the abdomen, or in the thighs, have completely recovered, by abstaining from all animal food, even from broths, salted and pickled provisions of every description; while they subsisted for several weeks exclusively on barley-water, wort, or other mucilaginous vegetable decoctions; without using any medicines, or applying ointments. On the other hand, frequent blood-letting, as well as the internal use of balsamic drugs, or what are emphatically termed vulnerary herbs, generally tend to increase febrile heat, and consequently render the wound more dangerous than if its healing were solely intrusted to the efforts of Nature. In short, venesection will be proper only in those cases which admit of cooling repellent applications, in the very first stages of external inflammation. But, if the latter become violent, being attended with great tension, irritation, and pain, it will be proper to apply either the emollient poultice before mentioned, every three hours; or fomentations made of elder and chamomile flowers, wormwood, &c.; or, according to circumstances, a solution of Venice soap in spirit of wine. Thus, if the inflammation cannot be re-

solved, and must be suffered to terminate in suppuration, the method here pointed out will be applicable; and, in order to mitigate acute pain, KIRKLAND recommends *warm oil* to be applied; an ancient remedy, the excellence of which is recorded in the history of the Good Samaritan. Nay, the modern Arabs heal their gun-shot wounds in a similar manner, by pouring into them fresh, warm butter.

As soon as *suppuration* takes place, the symptomatic fever generally subsides; but, if the latter continue to exert its influence over the patient, this circumstance may arise from the accumulation of crudities in the alimentary canal, and which ought, without delay, to be removed by cooling laxatives. These will prove no impediment to the suppurative process, but rather tend to promote it, by abating and suppressing the fever. If, nevertheless, with the utmost precaution in the cure of wounds, the purulent discharge should take its course towards the interior parts, or enter the circulation of the blood (an event which often suddenly occurs), the inevitable consequence will be a hectic fever. Sir JOHN PRINGLE therefore observes, that such an alarming effect generally follows the timid use of the knife; that is, when the incisions have either not been made sufficiently deep, or when they cannot be attempted, as is the case in gun-shot wounds.

Foreign bodies, such as iron, lead, splinters of wood, glass, linen, &c. should, if possible, be speedily extracted from wounded parts; and, in all serious accidents of this nature, surgical aid ought to be procured without delay.—CARVER

observes, that the skin annually dropped by serpents, though perfectly dry, forms an admirable remedy for drawing thorns, splinters of bones, wood, &c. from the parts thus injured; of which remedy, however, we cannot speak from experience.—When the wound is not inflamed, such extraction may be promoted by enlarging its orifice with a proper instrument; afterwards immersing the limb in tepid water, or repeatedly applying to it a cloth soaked in a similar fluid. But, if any pointed bodies, for instance, pieces of glass, cannot be thus removed, the wounded part should be exposed to the steam of water, and frequent emollient cataplasms be laid over it, with a view to facilitate the ejection of hurtful matters, by means of a speedy suppuration. As soon as the tumor thus treated becomes soft, and presents a yellowish-white spot in its centre, it must be opened; though such favourable change sometimes requires an attentive treatment, for several weeks.

Wounds inflicted by blunt instruments, or by the grazing of a bullet, or by the large and blunt teeth of animals, provided they be not poisonous, should also be treated in the manner already stated; though it will, in these cases, be useful to apply a pad of folded linen, moistened with sweet-oil, or with a tepid mixture of vinegar and water; because such wounds partake of the nature of *bruises*. With a view to afford greater security, the parts thus bitten, may preferably be washed with milk, or with luke-warm vinegar and water. LANGE, a German surgeon, asserts, that one dram of the pulverized seed of Water-Hemlock, taken every morning on a piece of bread

bread and butter, have not only healed malignant bites of animals, but also cured large and fetid ulcers, in an almost incredibly short space of time.

If the shin-bone be wounded, no oil or unguent must be applied; but the injured part should be dressed with a pad dipped in arquebusade or Goulard-water, or vinegar; either of which ought to be occasionally dropped on the linen, and this suffered to remain undisturbed, in order to exclude the air, and to prevent suppuration. If, nevertheless, inflammation be apprehended, the patient may use, internally, a julep, composed of one pint of water, in which two drams of nitre are previously dissolved, and afterwards 8 oz. of the tincture of roses, 4 oz. of the syrup of pale roses, and 20 drops of vitriolic acid, are successively added: of this mixture he may take two table-spoonfuls every second hour, or oftener; and its operation ought to be supported by cooling purgatives, such as cream of tartar, or any neutral salts.—According to FAUDIGUIERE, the honey-plaster above mentioned, or the tinder obtained from burnt paper, when applied to a fresh wound, and allowed to remain on the part affected, till it spontaneously fall off, has often proved a very efficacious remedy.

There are many instances on medical record, where small wounds of the veins, in consequence of unskilful blood-letting, have been attended with fatal effects: thus, if a tendon, or cutaneous nerve, be injured, or the orifice in venesection be made too small, the whole arm or leg will become inflamed, and the swelling suddenly spread to the points of the fingers or toes. In these cases, the whole limb

ought to be speedily tied up with a proper bandage, and dressed with Goulard or arquebusade-water; and BRAMBILLA recommends emollient, anodyne, and antispasmodic remedies to be applied to the wounded part.—There are, however, instances, where the method before suggested would be insufficient to effect a cure. FOUBERT asserts, that an inflamed arm, in consequence of an injured nerve, by venesection, was successfully treated, “first with corrosive (septic) applications to the part affected, and afterwards with bread-poultices containing Goulard-water,” on the suggestion of ALIX.—The celebrated HEISTER recommends a mixture of oil of turpentine and spirit of wine, to be applied to such wounded nerves; others advise warm spirituous liquors; and SHERWEN justly praises the efficacy of *warm oil of turpentine*, which is used by country people, in deep wounds inflicted by a needle, or other pointed instrument, with a view to prevent suppuration: and he observes, that cooling and emollient external remedies are unavailing in those nervous casualties, consequent on blood-letting.

Persons wounded by *gun-powder*, especially in the face, should not attempt to extract such particles of the powder as may have penetrated through the skin; because they are apt to break, and sink deeper into the muscular fibres: the only application necessary, on these occasions, is Goulard-water, or, more effectually, the ointment composed of oil and lime-water, stated under the article BURNS.

With respect to *gun-shot wounds*, we shall only remark that, according to the experience of the ablest surgeons on the Continent, such

injuries are always more speedily healed with oil and emollient cataplasms, than with essences, balsams, and other heating drugs. But, as the opinions of professional men greatly differ on this subject, we must refer the curious reader to Mr. JOHN BELL's late publication, entitled "*Discourses on the Nature and Cure of Wounds*," (8vo. 9s.); and shall add a few remarks of Dr. ROBERT JACKSON, extracted from the 11th vol. of "*The London Medical Journal*;" where this skilful practitioner expresses himself to the following effect:—The practice of dilating, poulticing, &c. of *gun-shot* wounds, appears to be justifiable only in those cases, where it becomes necessary to extract the ball, or the fragment of a bone; or in which inflammation is about to commence. In all other instances, Dr. J. considers dilatation as superfluous, and even as contributing to retard the cure: in his opinion, it is sufficient to bind the wound with linen rags, or similar bandage, to prevent the access of air. Cataplasms, says he, may be serviceable in cold climates; but, in warm countries, bandages moistened with laudanum, or spirituous liquors, and even the affusion of cold water upon wounded limbs, dispose them to heal in a very remarkable manner. He confirms these observations by numerous cases of soldiers who were wounded in the contest with America; and who recovered more speedily by this treatment, than by adopting the practice of dilatation, and suppuration.—See also the articles *STYPTIC* and *TOURNIQUET*.

Wounds of the *joints*, such as the *knée*, foot, &c. heal most expeditiously by the simple application of cold water; provided the

orifice of such wounds be immediately contracted by means of adhesive plaster. If they happen to be deep, SCHMUCKER advises blood to be drawn from a vein; while he observes, that, by renewing the compresses with fresh water, as soon as they become warm, such injuries have generally been cured, without producing inflammation, or any other symptoms.—FÖN, on this occasion, recommends the powder of colophony to be strewed on a pledget, which should be moistened with rectified spirit of wine, and thus applied to the injured part; where it will promote the discharge of the glutinous synovia, or the water lubricating the joints.—See also *TENDONS*.

WOUNDS, in farriery, may be occasioned by various accidents; but, as our prescribed limits do not admit of a minute detail, we shall at present state only the treatment, which may be most advantageously adopted, on common occasions.

In all fresh wounds, occasioned by cutting instruments, it will be sufficient to bring the lips together by ligature, or by suture; after which, rags dipped in brandy should be applied; or the orifice may be covered with a pledget spread with the following ointment:—Take of Venice turpentine, and bees-wax, each 1 lb.; of olive-oil 1½ lb., and 12 oz. of yellow resin: let these ingredients be melted together, and 2 or 3 oz. of finely-pulverized verdigrease be added; the whole being stirred, till it become cold.—See also vol. ii. p. 482.

In cases of scalds or burns, where the skin remains sound, it will be advisable to bathe the part with camphorated spirit of wine, and to cover it with rags dipped in the same liquor: salt may also be applied

applied to the burn or scald with considerable efficacy. But, if the skin be once broken, the part affected must be anointed with lincseed or sweet-oil, and a plaster, consisting of bees-wax and oil, be laid over it. If, in consequence of the pain, a slight degree of FEVER occur, the animal must be bled, and treated in the manner directed under that article.

The most important, and also the most frequent, of the simple wounds, however, are those of *broken knees*: this injury is sometimes occasioned by accident, but more commonly by the negligence of groomers; the carelessness of bad riders on rough roads; or, by exhausting the horse's strength through excessive labour. On such unfortunate occasions, the wounded parts must first be washed with a sponge dipped in warm water, to prevent the inflammation that would otherwise ensue, from the particles of gravel or sand adhering to the flesh: next, they ought to be gently wiped with dry cloths, and bathed with a mixture, consisting of equal parts of camphorated spirit of wine, and vinegar: thus cleansed, they should be covered with a pledget of tow, dipped in the same composition. But, if the wound be so deep, as to produce a considerable degree of inflammation, it will be necessary to promote suppuration, and to treat it in the manner pointed out vol. iii. p. 455.—For the proper management of the more dangerous wounds, the reader will consult the articles *HOOF-BONY*, *HOOF-HURT*, *OVER-REACH*, *PUNCTURES*, *QUIT-TOR-BONE*, &c.

WOUNDWORT, or *Stachys*, L. a genus of plants consisting of 22

species; 4 being indigenous; of which the following are the principal.

1. The *palustris*, or Marsh Woundwort. See Clown's *ALL-HEAL*.

2. The *sylvatica*, or HEDGE-NETTLE WOUNDWORT, is perennial; grows in hedges and woods, where it flowers in the months of July and August.—The whole of this plant possesses a fetid smell; and under its shade, toads are said to retreat for shelter. A yellow dye is obtained from its leaves and branches. It is eaten by sheep and goats; but refused by horses, cows, and hogs.—BECHSTEIN observes, that the stalks of the Hedge-nettle Woundwort, when managed in the manner similar to that pursued with *hemp*, afford a woolly substance, which may be spun into yarn; and, on bleaching it, becomes remarkably white.

WREN, the COMMON, or *Monticola troglodytes*, L. is a very diminutive bird, inhabiting all parts of Europe, and especially England, where it maintains itself during the severest winters. It is from 3 to 4 inches in length; the head, neck, and whole body, are of a deep-brown colour.

Wrens construct their nests in the corners of out-houses, stacks of wood, or holes in a wall, being nearly of an oval shape, and composed chiefly of moss, lined with feathers: the female lays from 16 to 18 minute white eggs, marked with red spots; and produces two broods in a year.—These creatures subsist on small worms and insects: they have a pleasing note in the *pairing* season, as well as in the winter, especially when fed with poppy-seed; and the voice is much strong-

or than could be reasonably expected from a little warbler which scarcely weighs three drams.

WRESTLING, is a wanton combat, or engagement between two unarmed persons, who exert all their strength and dexterity to throw each other on the ground.

Wrestling was in great repute among the ancients; but, with the modern nations, it is seldom practised. Indeed, it is almost forgotten in Britain, excepting in a few of the less civilized counties, where it forms a favourite game at *wakes*. This exercise, however, like that of cudgel-playing, ought to be abolished; on account of the accidents thus wilfully occasioned; for every nerve is strained by the candidates for *rural fame*, who thus frequently lay the foundation of some severe chronical complaint, or meet with dislocations, fractures, and other casualties, which often terminate in lingering illness, or premature death.

WRITING, is the art of conveying our ideas to others, by means of certain characters.

As the history of this noble invention is lost in the remote periods of antiquity, it would be foreign to our plan, to enter into a detail of the opinions and hypotheses that have been formed by antiquarians, with a view to account for its origin.—Hence we shall notice the patent which was granted in February, 1780, to Mr. JAMES WATT, for a new method of *Copying Writings*. He directs a piece of thin, unsized paper, of the same dimensions as that which contains the original writing, to be moistened with water; or, which is preferable, with the following liquor: Take 2 lbs. of distilled vinegar, and let 1 oz. of the sedative salt of bo-

rax be dissolved in it: next, 4 oz. of oyster-shells, calcined to whiteness, are to be put into the vinegar: the mixture must be repeatedly shaken, during 24 hours; when it is suffered to stand till it deposit its sediment. The clear liquor should now be filtered through blotting-paper into a glass vessel; 2 oz. of bruised Aleppo-galls be added; and the mixture kept in a warm place for 24 hours, being frequently shaken: at the end of that period, it must be filtered a second time, and afterwards diluted with one quart of pure water. Now it should again be suffered to stand for 24 hours; and, if any sediment be deposited, it ought to be strained a third time.—When the paper has been moistened with this liquor, it should be placed between two thick unsized pieces of the same material, in order to absorb the superfluous humidity; and, thus prepared, it must be applied to the writing which is to be copied; a piece of clean writing-paper being placed over both. The whole is now directed to be submitted to the action of a rolling-press; in consequence of which, the written characters will appear on both sides of such moistened paper.—The patentee employs a peculiar press, of his own invention; which, however, cannot be satisfactorily described, without the aid of delineation: hence, the inquisitive reader will consult the first volume of the "*Repertory of Arts*," &c.; where this specification is illustrated by an engraving.

Beside the simple method of restoring *illegible writing*, already stated under the article **DEED**, we shall mention two other expedients, either of which may be used, accordingly as the characters are more

more or less obliterated : Boil half an ounce of best Aleppo-galls in 4 oz. of water, till one half of the fluid be evaporated ; filter the decoction through blotting-paper, and apply it, by means of a soft painter's brush, to the effaced part of the writing ; on which it must be suffered gradually to dry : thus, the illegible letters will, in most cases, become black ; and re-appear. If, however, this mode of recovering them should not prove successful, the following application has often effectually answered the purpose : Take a leaf of white unsized paper ; moisten it with a strong solution of green vitriol in water ; so that it may be *damp*, without being *wet*. Next, apply such paper to the illegible part of the writing, by means of the flat hand, in order to communicate its moisture to the latter ; when it must be allowed to dry in the open air. In this manner, the almost dissipated astringency of the galls will be renovated, so that the vanished characters will generally re-appear on the surface. Let it, however, be remembered, that both preparations must not be tried on the same paper ; as they would

certainly change the whole to a black colour.

WRY-NECK, or *Jynx torquilla*, L. is a bird of passage, somewhat larger than a lark ; of a brown and black colour, with wave-like stripes ; appearing in Britain in the spring, and preceding the *Cuckoo* : it has received its name from a whimsical habit of turning and twisting its neck, so as to bring the head over its shoulders : it also possesses the faculty of erecting the feathers of its head, similar to those of the *JAY*.

Wry-necks construct their nests of dry grass, in the hollows of trees : the female lays 6 or 8 white eggs, which have a very thin shell : it is remarkable, that the young brood, while in the nest, utter a hissing noise, not unlike that of *snakes*. During the period of incubation, the male attentively supplies the hen with *ants*, which furnish to these birds a very agreeable repast.

M. BUFFON informs us that, toward the end of summer, the Wry-neck becomes exceedingly fat ; and that its flesh, in point of delicacy, is equal to that of the *ORTOLAN*.

WYMOTE. See MARSH-MALLOW.

Y.

YAM, or *Dioscorea bullifera*, L. is a native of Ceylon, whence its culture has been introduced into the West Indies, and other parts of America : it is divided into two varieties, known under the names of *red*, and *white* ; from the colour of their bulbous roots.

Yams flourish best on poor soils ; and retain their beautiful verdure till a late period in the year : hence, they are said to ameliorate the ground nearly as much as a crop of turnips. Being propagated by setting the *eyes*, their culture corresponds with that of potatoes ;

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and, like these roots, yams often prove an excellent preparatory crop for wheat. Farther, they are very productive; so that the red variety yields, in general, 12 tons per acre: the white sort is less fruitful; but, being more delicate, it is chiefly raised for the table, in the West Indies.

The culture of these bulbous roots in Britain is, at present, we understand, confined to the counties of Mid-Lothian and Stirling; where they are given to cows; the milk of which is thus considerably increased, without affecting its quality or flavour.

As an article of food, the yam possesses similar properties with the potatoe, excepting that it is less mealy. in a raw state, it is viscous; but, when roasted, this bulbous root is equally wholesome and nourishing, so that the inhabitants of the West Indies prefer it even to bread. In some respects, therefore, yams are more valuable than potatoes; because the former are much lighter, and more easily digested:—when first dug out of the ground, then dried in the sun, and preserved from humidity, in casks full of dry sand, they may be kept for several years, uninjured by frost, and without losing any part of their nutritive quality.—These beneficial roots may also be peeled, deprived of their moisture by pressure, and dried in the same manner as Mr. MILLINGTON directs potatoes to be preserved (see vol. iii. p. 438). In this manner, yams may be packed in casks, like flour, and imported in a perfectly sound state, from the West Indies: when grated, and mixed with wheaten or barley-flour, they may be formed into a light and salubrious *bread*. Nor are they less

nourishing, when converted into pottage, or pudding, with the addition of milk. Thus, Mr. R. PEARSON (*"Annals of Agriculture,"* vol. 35), informs us, that the meal, obtained from the boiled and grated roots, when beaten up with milk and eggs, without any flour, yielded a firm and well-flavoured dish; which could with difficulty be distinguished from a common batter-pudding. By this treatment, the yams are divested of their saccharine taste, which renders them at first disagreeable to some persons; though such property is, on the whole, of considerable use; as it saves the expence of sugar.

YARD, is a measure of length, employed for measuring cloth, stuffs, &c.

The English yard contains three feet, or 36 inches: it is converted into ells English, by subtracting a fifth part, or 7 one-5th inches; and into ells Flemish, by adding one-eighth, or $4\frac{1}{2}$ inches.

YARN, in general, denotes the manufacture of wool, hemp, flax, cotton, &c. converted into filaments or threads, which are subservient to a variety of useful purposes.

Formerly, all yarn was spun or twisted by means of the distaff, or wheel; but lately, both the ingenuity of mechanics, and the powers of machinery, have been called in aid (see the articles COTTON, and SPINNING), to facilitate that operation: and, in June, 1787, Messrs. JOHN KENDREW and THOMAS PORTHOUSE, obtained a patent for their invention of a machine, upon new principles, designed to spin yarn from hemp, tow, flax, or wool.—As this privilege is now expired; and such contrivance promises to be very useful in the woolen as well as other manufactures,

we

we subjoin a concise account of its construction.

The machine consists of a frame, which supports a cylinder, three feet in diameter, and ten inches in breadth; made of dry wood or metal; and its circumference being covered with smooth leather. On this, are placed six rollers, also covered with leather, and upheld in their situations by slits made in a piece of wood, in which the iron axes of the rollers move, at the same time suffering them to press on the principal wheel: such rollers are of different weights; the highest on the cylinder weighing two stone, while the others gradually decrease, so that the lowest is only two lbs. in weight. A cloth is placed beneath the cylinder, that revolves upon two rollers, inserted in the frame; and by its side there is a table of an equal length and breadth, furnished with two similar cloths.

The workman lays on this table a greater or smaller quantity of the material intended to be spun, according to the degree of fineness required; spreading it uniformly on the cloths, whence he removes and applies it to the revolving cloth. The rollers and cylinders are then put in motion by wheel-work moved by a horse, water, or any other impulsive power; the wool, &c. is drawn forward, and extended, during its passage, into a thread or sliver; which, on being submitted to the action of a similar machine, but of different dimensions, is spun into thread of various degrees of fineness: after the yarn has thus passed beneath the rollers, it falls into canisters suspended below, for its reception.—A minute specification of this useful machinery is inserted in the 16th vol. of

the "*Repertory of Arts*," &c. where it is illustrated by an engraving.

By the 12 GEO. II. c. 21, §. 5, 6, 7; and 26 GEO. III. c. 11, *Linen*, *Woollen*, or *Bay-yarn*, may be imported from Ireland, in British-built vessels, duty-free, provided they be regularly entered; but, from other countries, *Cable-yarn* is subject to the duty of 9s. 4½d. per cwt.;—*Cotton-yarn* pays 3d. 17-20 per lb.; though, when imported from Ireland, it is free from the customs;—*Grogram-yarn* is chargeable with 8½d. per lb.;—*Raw-linen-yarn*, with 1d. 7-10 per lb.;—*Wick-yarn* pays 1l. 15s. 11½d. per cwt.; and *Worsted-yarn*, 11d. per lb.

YARROW, the Common, or MILFOIL, *Achillea Millefolium*, L. an indigenous perennial, growing in meadows, pastures, and on road-sides; blowing from June till August.—The flowers of this vegetable yield an essential oil, which possesses an aromatic odour, a bitter taste, and is similar to that of chamomile.—A decoction of its leaves with chamomile flowers is said to form a corroborant diet-drink for children who, on account of their rapid growth, are unable to retain their water, during the night: but, for this purpose, from one to two pints of such preparation ought to be taken in the course of 24 hours.—LINNÆUS observes, that the Dalecarlians have a practice of throwing the flowers and leaves of the common yarrow into *beer*, while in a state of fermentation; with a view to increase its intoxicating effects.—BAUTSCH, in Germany, has usefully employed the whole herb, in the process of *tanning*.

The Milfoil being a creeping plant,

plant, which spreads uncommonly from its numerous seeds, it often becomes a troublesome weed, if it be once suffered to grow in fields. Nevertheless, Dr. ANDERSON recommends its culture as a proper food for cattle.—It is eaten by sheep and hogs; but is relished neither by horses, cows, nor goats.

YAWNING is an involuntary opening of the mouth; which is occasioned by weariness, or an inclination to sleep; though it frequently occurs early in the morning, and immediately after rising.

Yawning is performed by extending all the muscles, that are capable of spontaneous motion; by expanding the lungs; by slowly and gradually inhaling a large portion of air, and expiring or breathing it out, after it has been rarefied in the body; and lastly, by restoring the muscles to their natural position. Persons of strong and healthy constitutions are most liable to this natural impulse, when they awake, on account of the perspirable matter that lodges in the pores of the skin: hence BOERHAAVE observes, that yawning appears to be designed by Nature, to move, accelerate, and uniformly to distribute the humours throughout the system; consequently, to render the various muscles capable of discharging their respective functions. Such involuntary motion, therefore, greatly conduces to health; but, if it become habitual, or be too often repeated, especially by persons of sedentary lives, it will be advisable to take a short walk in the fresh air, and to inspire a large portion of that salutary fluid, in *temperate* weather. Sometimes, however, yawning is the fore-runner of convulsions or ague-fits; in which cases, those distressing affections

might often be prevented, by adopting timely and proper remedies.

YEAR. See KALENDAR.

YEAST, or BARM, is the froth or scum which rises on beer, during the act of fermentation.

Yeast is an article of the greatest importance in domestic economy; forming a necessary ingredient in bread, which would otherwise become heavy and unwholesome. As it cannot at all times be obtained in sufficient quantities, we propose to state various methods which have been contrived, for generating and preserving this commodity.

In the 2d vol. of the "*Memoirs of the Philosophical and Literary Society of Manchester*," Mr. HENRY has published a method of preparing *artificial yeast*, by which good bread may be made, without the aid of any other ferment. He directs flour and water to be boiled to the consistence of treacle; and, when the mixture is cold, to saturate it with *fixed air*. Next, it must be poured into large bottles with narrow mouths, which should be loosely covered with paper; and, over this, with a slate and a weight, to keep them steady. The bottles ought now to be placed in a room, the temperature of which is from 70 to 80°; and the mixture be stirred two or three times in the course of 24 hours. At the end of about two days, according to Mr. H., such a degree of fermentation will have ensued, that the mixture acquires the consistence of yeast. In this state, the flour, intended to be made into bread, must be incorporated with such artificial barm, in the proportion of 6 lbs. of the former to one quart of the latter, and a due quantity of warm water. The whole is now to be kneaded together in a proper

proper vessel, covered with a cloth, and suffered to stand for 12 hours, or till it be sufficiently fermented; when it should be formed into loaves, and baked. Mr. HENRY adds, that this yeast would be more perfect, if a decoction of malt were substituted for water.

A *simple* decoction of malt, however, is now fully proved to be convertible into yeast, fit for brewing: this discovery was made by Mr. JOSEPH SENYOR, on whom the Society for the Encouragement of Arts, in the year 1790, conferred a bounty of 20l. He directs 3 wooden or earthen vessels to be procured, one being capable of holding 2 quarts, the other 3 or 4, and the third 5 or 6 quarts. A quarter of a peck of malt is then to be boiled for 8 or 10 minutes, in 3 pints of water; when one quart must be poured off the grains into the first vessel: as soon as the liquor becomes cool, such vessel ought to be removed towards the fire, or to a temperature of about 70 or 80° of FAHRENHEIT's thermometer. In the course of 30 hours, the fermentation will commence; when 2 quarts of a similar cool decoction (made, we suppose, from the same malt), must be mixed with this yeast, in the second, or larger vessel; and be repeatedly stirred in the manner practised in common vats. As the fermentation increases, a greater portion of the like decoction must be added, and be worked in the largest vessel: thus, at length, a sufficient quantity of yeast will be produced, for brewing 40 gallons of beer.

This useful contrivance of Mr. SENYOR, is farther confirmed by the recent experiments of a correspondent, whose plain and interesting account we are induced to

quote in his own words: "I caused (says he) a gallon of rather weak wort to be made; with part of which, when cool, I filled the middle part of NOOTH's machine: as soon as it was thoroughly saturated with fixed air, I mixed the whole, and placed it in a wooden vessel near the fire, the weather being rather cool. In about 24 hours, there were some faint signs of fermentation; yet, at the expiration of the fourth day, I obtained no more than two table-spoonfuls of very indifferent yeast; and the wort had become extremely offensive. As the yeast was not only very poor, but in too small a quantity for any domestic purpose, I made an infusion of malt and a decoction of hops, in the manner used among the inhabitants of the island of Jersey, when they find it necessary to increase a small quantity of brewer's yeast. To this preparation, I added my two spoonfuls of yeast; let the mixture stand 24 hours; then poured off the watery part; mixed the sediment with an increased proportion of the malt and hops; which fermented, and produced yeast enough to work a gallon of strong-beer, that yielded a pint of very fine yeast, of which excellent bread was made. Having some reason to suspect, that the fixed air was of little or no use in this experiment, and that a wort might be made, which would ferment of itself, before the liquor were spoiled by too long keeping, I caused to be made four gallons of good wort, rather above porter strength, well hopped, and with a considerable quantity of colour, and treacle, to preserve it from putrefaction. It was equally divided, one-half impregnated with fixed air, as in the first experiment; each

was

was put into a wooden vessel; and both were placed in an equally warm situation. At the expiration of 24 hours, there being no signs of fermentation, I stirred in a tea-spoonful of salt, and shook a little flour on the surface of each. In 12 hours more, the unimpregnated wort shewed some appearance of fermentation, which went off, and was renewed by placing the liquor near the fire; and at the seventy-fourth hour, it had a tolerably good head of yeast; but the impregnated wort was only beginning to ferment. In 24 hours after, we took a pint of yeast from the wort which was not impregnated with fixed air, and about a tea-cupful from the other, which was as inferior in quality as in quantity. The worts were then mixed, put into other vessels, and bid fair to become excellent beer.—I cannot say that this is a very expeditious mode of making yeast; but I believe it is a sure one, and within the power of every person who can procure the necessary ingredients for making good beer.”—Our correspondent, therefore, conceives to have proved by this experiment, “that fixed air is, at least, not requisite to produce a fermentation in beer.”

Dr. LETTSON (“*Hints for promoting Beneficence*,” &c. 1797) recommends the following preparation as a substitute for yeast: Boil 4 oz. of flour in 2 quarts of water, for half an hour; and sweeten it with 3 oz. of Muscovado sugar. When the mixture is nearly cold, pour it on 4 spoonfuls of yeast, into an earthen or stone jar sufficiently deep to admit the new barm to rise: it must now be well shaken; placed near the fire for one day; and then the thin liquor

be poured off the surface. The remainder is next to be agitated, strained, closed up for use, and kept in a cool place. Some of the yeast, thus prepared, ought always to be preserved, for renewing or making the next quantity that may be wanted.

The following method of preparing *excellent yeast*, we state from the “*Transactions of the Economical Society of Petersburg*,” on the authority of Baron VON MESTMACHER: When the wort is made, and it becomes necessary to provide yeast for its fermentation, he directs 40 gallons to be drawn off, into a vessel provided with a lid, and capable of holding one-third more than that quantity. Next, 7 lbs. of leaven are to be dissolved in a little wort, and mixed with the 40 gallons: 17 lbs. of rye-meal, and an equal quantity of ground malt, must now be added, by agitation for some minutes, and suffered to stand for half an hour. At the end of that time, a spoonful of the best yeast ought to be incorporated with this compound; the lid be placed upon the vessel; and the whole remain undisturbed for 48 hours; when the mixture will be found converted into 60 gallons of remarkably good barm.

In the 1st vol. of “*Annals of Agriculture*,” Mr. KIRBY suggests mealy potatoes to be boiled, till they become perfectly soft; in which state, they must be mashed with hot water, so as to acquire the consistence of yeast. Two ounces of coarse sugar, or molasses, are then to be added to every pound of potatoes; and, when the mixture is luke-warm, two spoonfuls of barm must be stirred into it, according to the proportion above stated. This composition should

should now be removed towards the fire, or to a warm place, till the fermentation cease; when a certain portion may be kneaded with flour, which ought to stand eight hours before it is baked.—Mr. K. observes, that every pound of potatoes, thus managed, produces nearly a quart of yeast, which will remain good for three months.—The roots, however, ought, in the opinion of Mr. BORDLEY, to be perfectly ripe and *well-sprouted*; as, in the contrary case, no fermentation will ensue.

Similar to this preparation, is the substitute for yeast contrived by Mr. RICHARD TILLYER BLUNT; in consequence of which he obtained a patent, in October, 1787.—He directs 8 lbs. of potatoes to be boiled in water, in the same manner as for the table: after which they must be mashed; and, while they are warm, 2 oz. of honey, or other saccharine matter, and one quart of common yeast should be added.—Three pints of this compound are sufficient, with the aid of warm water, for making the *sponge*; and, when this begins to sink, the dough ought to be formed into loaves, and baked.

An useful substitute for yeast, may be obtained by nearly filling a bason, or tea-cup, with bruised or split pease, and pouring on them boiling water: the whole is now to be set on the hearth, or other warm place, for 24 or 48 hours, according to the temperature of the season: at the end of that time, a froth, possessing all the properties of yeast, will appear on the surface of the fluid. This method, we understand, is commonly practised in the eastern countries; and the barm, thus procured, is said to render the bread light and palatable.

To the different modes of procuring yeast, already specified, we shall add an easy and expeditious process, which appears to be very plausible; and has lately been communicated to the Editor, by an anonymous correspondent; though he cannot vouch for its success.—Take six quarts of soft water, and two handfuls of wheaten or barley-meal; stir the latter in, before the mixture is placed over the fire, where it must very gradually simmer, and at length boil, till two-thirds of the fluid be evaporated, so that it may consist of two quarts. When this decoction becomes cool, incorporate with it (by means of a whisk) a powder, consisting of two drams of salt of tartar, and one dram of cream of tartar, previously mixed. The whole should now be kept in a warm place.—Thus, a very strong yeast for brewing, distilling, and baking, is said to be obtained. For the last mentioned purpose, however, such barm ought to be first diluted with pure water, and passed through a sieve, before it be kneaded with the dough; in order to deprive it of its alkaline taste.

The *preservation of yeast*, for a considerable time, is an object of equal importance to that of producing it artificially: hence, it has been recommended to put a quantity of that commodity into a canvas bag, and to submit the whole to the action of a screw-press, so as to deprive it of all moisture; in consequence of which, the barm will remain in the bag, as firm and tough as clay: in this state, it must be packed in casks, well secured from the access of air, and may be kept in a sound state for any period of time. We believe, however, it would be more safe and

and advisable to form the pasty yeast into circular, flat vessels, resembling tea-saucers, and in that state to dry the whole mass, either in the open air under shade, or in the moderate warmth of a baker's oven.

Mr. FELTON MATHEW's mode of separating beer from yeast, and preserving the latter (for which he obtained a patent, in February, 1796), in many respects corresponds with that just described: the principal difference is, that he directs the bags to be placed in troughs perforated with holes, to prevent the former from bursting; and then to submit them to the action of a lever, aided by incumbent weights. When the beer is thus expressed, the yeast remaining in the bags, will crumble into coarse powder: this must be spread on canvas, hair-cloth, or similar porous material, and gradually dried in a malt-kiln, or in any room or stove, where a regular temperature of from 80 to 90 degrees is maintained; and, lastly, as soon as it becomes perfectly dry, the barm must be packed in bottles or casks, from which the air is completely excluded.

Another mode of preserving yeast, consists in throwing a *witthy*, or the young shoots of willows twisted together, into the vessel where the yeast is working; and suspending them in a warm room, till the next opportunity of brewing arrives. We conceive, however, the following expedient to be preferable, both in point of cleanliness and economy; it being successfully practised by some careful house-wives:—Take a clean wooden bowl, of such size as may be most convenient; spread a regular coating of yeast around its inner

surface; and, as often as this dries, repeat the process, till a thick cake be formed: the vessel must be kept in a dry place. When any barm is wanted, a small piece may be cut out; and, after dissolving it in warm water, the solution will answer all the purposes of fresh yeast, whether designed for baking, or for brewing.

The following process being advantageously employed in Germany, for preserving barm, so as to be fit for all domestic uses, after a considerable time, we have inserted it for the benefit of our country-readers: When the yeast is taken from new beer, it must be put into a clean linen bag, and be laid in a vessel half full of dry, sifted wood-ashes: the whole is then to be covered to the thickness of three or four inches with similar ashes, and be pressed together. In this situation, the barm should remain for a day, or longer, if it be necessary; when the ashes will absorb all the moisture, and the yeast acquire the consistence of a thick paste. It must now be formed into small lumps, or balls; dried in a moderate heat; and kept in bags, in an airy, dry place: when any barm is wanted, a few of such balls may be dissolved in warm water; or, which is preferable, in beer; and they will answer every purpose of fermentation.

Beside its utility in baking and brewing, late experiments have fully proved, that yeast is of singular efficacy in *putrid fevers*, *putrid sore throats*, and similar malignant complaints: for the first discovery of this important fact, we are indebted to the Rev. EDMUND CARTWRIGHT. The dose of barm, according to his experience, and that of other practitioners, is two large

large spoonfuls, to be repeated every three hours : in some cases, this has been sufficient ; but, in others, it was necessary to administer the Peruvian bark, between each dose. In a few instances, indeed, emetics and laxatives were given previously to taking the yeast ; but, in general, this simple remedy seldom failed to effect a cure ; provided due attention was bestowed on the diet and regimen of the patient.

YELLOW, is one of the seven primitive colours.

The principal article affording a yellow dye, is the Weld, or **DYER'S GREEN-WEED** ; of the culture of which, the reader will find an account in that article.—See also vol. ii. p. 205.

An excellent yellow dye may likewise be prepared from the flowers of the *acacia*. These must be gathered, before they be fully blown, and dried in an earthen vessel over a moderate fire, till they crisp, or curl up, in the same manner as tea-leaves. The ripe seeds of the same tree are then added in the necessary proportions ; and the whole, when boiled in river-water, with the addition of alum, will impart a yellow colour of any shade required.

In the 61st vol. of the "*Philosophical Transactions of the Royal Society*," for 1771, the following receipt for preparing a beautiful yellow dye, is communicated by Mr. **PETER Woulfe** : Take half an ounce of pulverized indigo, and mix it in a deep glass vessel, with 2 oz. of strong spirit of nitre, previously diluted with 8 oz. of water, to prevent the indigo from taking fire. Let this mixture stand for a week, and then digest it in a sand-heat, for one or two hours ; adding 4 oz. of water. The solu-

tion is now to be filtered : when mixed with water, in the proportion of one part of the former to 4 or 5 of the latter ; and, on adding a little alum, it communicates a durable yellow colour. Mr. **Woulfe** remarks, that none of the tinging matter separates from the water, during the operation of dyeing, except the portion adhering to the cloth ; so that this preparation promises to be of essential service to dyers. He farther states, that cochineal, cudbear, or orchal, and similar colouring substances, when treated in this manner, will also impart a yellow tinge to silk and wool.

The chief *yellows* used in *painting*, are Dutch pink, Turbith-mineral, King's and Naples yellow : of these we have given a concise account, vol. ii. p. 37 ; but, as the preparation of the two last-mentioned pigments has not been accurately stated ; we shall subjoin, by way of supplement, a few hints respecting the manner in which they are compounded, for the use of artists.

King's-yellow.—Mix 20 parts of pulverized arsenic with one part of the flowers of sulphur : let them be sublimed in a proper vessel, in a sand-heat. When the sublimation is effected, the colour will be found in the upper part of the glass, whence it must be carefully removed, and levigated till it become a fine powder.—This pigment may also be obtained, by subliming orpiment in a similar manner ; and it may be rendered of a deeper or lighter colour, by increasing or diminishing the proportion of sulphur.

Naples yellow is prepared by levigating, on a dry stone, 12 oz. of white lead ; 3 oz. of antimony ; 1 oz.

oz. of alum; and a similar quantity of sal ammoniac. These ingredients must now be exposed, in an open crucible, to a moderate heat for some hours; after which, the fire ought to be increased for a short time; and, at length the mixture should continue for three hours, in a degree of heat sufficiently powerful to keep the crucible red hot. At the expiration of that term, it will acquire a beautiful yellow colour; which may be rendered of a brighter golden shade, by augmenting the proportions of antimony and sal ammoniac.

Yellow pigments of various shades may also be obtained, by triturating flowers of sulphur, or yellow ochre, in different proportions, with a solution of gum in water: and, lastly, the calx of iron, when precipitated by quick-lime, from a solution of green vitriol, has been recommended as a substitute for yellow ochre, in *house-painting*.—Another method of preparing the celebrated *Naples yellow*, is that of M. PASSERY, who makes use of the following ingredients, namely: antimony, 1 lb.; lead $1\frac{1}{2}$ lb.; alum and common salt, of each 1 oz.—We have inserted this recipe, on the authority of WIEGLEB; who simply enumerates the articles here stated, without communicating the process of compounding them.

Yellow Ink may be prepared, by previously dissolving a small portion of alum and gum-arabic in pure water, and then infusing a few grains of dry saffron in the same solution.—It may, likewise, be obtained by slowly boiling 2 oz. of Avignon or French berries in one quart of water, with half an ounce of alum, till one-third of the fluid be evaporated; when 2 drams of gum-arabic, 1 dram of

sugar, and a similar quantity of pulverized alum, are to be dissolved in this liquid: the mixture should then be filtered, and preserved in bottles.

Sympathetic Yellow Ink, is directed, by WIEGLEB, to be prepared in the following manner:—Take a handful of the leaves of common marigold (*Calendula officinalis*, L.), and macerate them for eight days, or longer, in half a pint of the best distilled vinegar; when the liquid must be separated from the leaves, by expressing them through white linen or cotton, and preserved in a glass bottle carefully stopped. If the desired colour is to be of a pale shade, an additional quantity of water may be added.—Invisible characters may be formed with this liquor on white substances, such as linen, silk or paper; and the yellow tint will appear on immersing them in the following liquor:—Take a sufficient quantity of violet or daisy flowers; bruise them in a marble mortar; add a small portion of water; express the liquid through white linen, and also preserve it in a glass bottle.—An infusion of turnsol will answer the same purpose.

YELLOW FEVER, is one of the most fatal epidemics to which the inhabitants of warm climates are subject.

As the opinions of physicians, concerning the nature and treatment of the *Yellow Fever*, are various and contradictory, we shall avail ourselves of the clear and satisfactory view of this malignant disease, lately given by Dr. THOMAS DANCER, in his excellent work, entitled "*The Medical Assistant, or Jamaica Practice of Physic*," (4to. Kingston, Jamaica; and Lond. Murray and Highley, pp. 384,

11. 12. in boards), designed chiefly for the use of families and plantations."—This intelligent practitioner justly observes, that the misunderstanding on the subject has probably arisen from an improper use of terms, or from the variable character of the disease; according to the prevailing constitution of the season; the quantity and force of contagious matter, and other causes. He is fully convinced, that it is not regularly one and the same disorder; but is often a compound, at one time partaking of the nature of the Malignant Fever, at another resembling the Bilious Remittent. Hence, it is not uniformly contagious, and the fever of *new-comers* may not always be malignant: there are instances in which, on their first arrival, they had a common fever, which afterwards changed into the yellow fever; though the reverse of this generally occurs.

Means of Prevention:—Dr. DANCER observes, that, though bleeding is precarious and hazardous after the fever has commenced, it may, nevertheless, in particular cases, where the habit is very full, &c. be considered as a mean of preservation. Young and athletic persons, therefore, may on their first arrival lose a few ounces of blood: their bowels should, on the same principle, be kept open; and every species of intemperance, as also exposure to the sun, and evening air, ought to be carefully avoided. It is, however, of still greater consequence to retreat, as soon as possible, from the shipping and seashore, the seats of infection, to a pure, airy, cool situation in the country, and there to remain for some months. Dr. D. has known many young men, who thus have

avoided any dangerous fever; and some who, by returning too speedily to the towns or sea-ports, fell victims to the disease.

"The prevailing mortality among new comers (says this accurate observer), is a good deal to be attributed to their own misconduct. Coming out in convoys, they arrive in numbers; meet at taverns; and, allured by scenes of novelty, they walk the streets, indulge to excess in the use of the country fruits; and enter too readily into the customs of the seasoned inhabitants, which are not at all suited to persons in their situation."

According to the experience of Dr. CLARK, the best preventive of this destructive epidemic, is *mercury*. Hence, he advises all persons, who have sufficient leisure, to undergo one or two courses of that medicine, after their arrival in the West Indies; to take a few laxatives; to confine themselves to a moderate use of wine; and to live principally on fruits and vegetables, for the first two months: for, by pursuing such conduct, "they may rely almost to a certainty on escaping the fever."

With respect to the *characteristic symptoms* of this malignant disorder, we cannot, on comparing several authors who have written on the subject, select a better or more correct description, than the following, given by Dr. DANCER; whose words we do not hesitate to quote; especially as many of our readers, or their relations, residing in Jamaica, or other parts of the Western World, must feel greatly interested on the occasion: "This fever, then, peculiar to new-comers, attacks suddenly; with alternate fits of heat and cold; violent pain in the head and back. The face is

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prodigiously flushed; the eyes are red and watery; the whole physiognomy of the patient is very peculiar, denoting anxiety and dejection of mind; and this unnatural appearance continues, till recovery begins to take place. The pulse, in the beginning, is frequent, full, and hard, sometimes irregular; the heat of the body very great; and the patient labours under great inquietude. This state of the fever continues for a longer or shorter period; sometimes only for a few hours; at others, for several days; and, when the ardent symptoms begin to decline, if not sooner, an irritation at the stomach commences, which is hardly, by any means, to be subdued, or even allayed. The patient now feels himself in other respects well; his pulse and heat being nearly natural, and he has seldom any return of fever; but the irritation and anguish at the stomach continuing, he at length vomits blackish matter; his eyes and neck first become yellow, and then the whole body. Blood flows from the mouth and nose: Delirium, preceded by a hurried, perturbed state of mind, and great restlessness, at length comes on; ending in total insensibility, &c. and ultimately in death."

The yellowness of the skin, however; is not a constant symptom; for sometimes it does not appear, or at least not till after death. Dr. DANCER farther observes, that the yellow fever is particularly distinguished by its sudden attack; as it is seldom, like other fevers, preceded with any symptoms of languor, weariness, &c.; by its having no very sensible abatement, or remission, till it totally subsides; by the extraordinary anguish about

the fore-part of the chest, and at the same time a torpid state of the bowels; so that the strongest purgatives, and in large doses, are often attended with little or no effect.

Such are the general symptoms, attending this fever in *Jamaica*; but numerous variations often occur in *America*, and other warm climates, where it is modified by the season of the year, or other circumstances, which our limits will not permit us to detail: we shall, therefore, briefly mention the supposed origin of this malady, and exhibit an account of the treatment that ought to be adopted.

The yellow fever is certainly endemial in the West Indies: its cause is reputed to be a peculiar contagion, which very generally affects persons recently arrived from a cold climate, and especially Europeans, or those who have not long resided in hot countries. Females, and negroes are, in general, exempt from its influence; but *mulattoes* and *tawnies*, or such as are descended from European and black parents, are equally subject to the fever with the whites.—From the West Indies, this epidemic has been conveyed to America, where it committed dreadful ravages, in the year 1793, especially in the province of Pennsylvania: nor is any person, who has once been seized with it, secure from a second attack.

Cure:—Conformably to the symptoms above stated, and drawn from actual observation by Dr. DANCER, we shall first exhibit his mode of treatment, in the different stages of the yellow fever, as applicable to the climate of *Jamaica*. He previously remarks, that his account, though incomplete, is sufficiently

ciently full and accurate, to enable any person to distinguish that disease from any other, except the malignant fever; to which it has an obvious affinity.

Where the yellow fever attacks in the manner of a common remittent, and shews no symptoms of malignity, till after some continuance, Dr. D. observes, that the following treatment may not be deemed necessary or suitable; though, he thinks it is, on the whole, the safest plan, to consider every fever with which a new comer may be seized, as being of this kind; for, unless the method of cure suited to it, be adopted in the beginning, it cannot afterwards be employed with any probability of success.

On a supposition, that a person newly arrived in Jamaica, or any other tropical country, be suddenly attacked with violent pain of the head and back, with heat and flushing of the face, &c. in the manner before described, Dr. D. recommends, in the first place, to let the patient be put to bed, as soon as he is taken ill; then an opening clyster to be administered; and, immediately after, a dose of calomel and jalap to be taken, either in powder, mixed with syrup of tamarinds, or made into pills. The dose must be regulated by the constitution of the patient, and the greater or less violence of the symptoms; so that from 5 to 10 grains of calomel, and from 15 to 30 grains of jalap, have been occasionally prescribed. Some time (from 2 to 3 hours) afterwards, a tea-cupful of tamarind-water, or a decoction of tamarinds with cream of tartar, should be drunk; and, if stools do not freely follow, the preceding, or a smaller dose, may be repeated in the course of 5 or 6

hours. If plentiful evacuations have taken place, but without any abatement of symptoms, small doses of calomel and antimonial powder should be given, in the proportion of from 5 to 10 grains of the former, to 3 or 5 grains of the latter; to be taken every three hours in barley-water, or thin panada. During the intervals, Dr. D. directs the following saline julep: Salt of wormwood, or salt of tartar, 2 drams, to be dissolved in half a pint of mint-tea. To every two table-spoonfuls of this solution, add one table-spoonful of strained lime-juice; which mixture is to be swallowed during its effervescence, or immediately after. In order to ascertain the exact quantity of the acid requisite to neutralize the saline draught, it should be tried first, by pouring into the latter small portions of the former, till the frothing be completed. At the same time, the mercurial frictions must be commenced; namely, two drams of the strong mercurial ointment, rubbed into the inside of the knees or thighs, every six hours; or, in some cases, every three hours; or, otherwise, half an ounce every six hours. If, in 12 or 15 hours from the first attack, there be no obvious remission, in consequence of such treatment, the frictions ought to be continued every three hours; and, if the bowels have not been opened, ten grains of calomel must be given in combination with jalap; or, in the contrary case, with one quarter of a grain of opium, to prevent the calomel from acting on the bowels, if already too loose. Thin barley-water, or other diluents, may be allowed frequently, and the medicines above specified be continued, till the mouth becomes sore, and the breath affected.

ed; unless a distinct remission of the fever be perceived. Should the stomach become irritable, and retchings commence, a blister must be instantly applied, either to the pit of the stomach, or between the shoulders; and vitriolic æther be administered in a little water, or in the saline julep before described.

The quantity of mercurial ointment to be used, as well as the calomel to be taken, during the whole course of this malady, is sometimes very considerable, before either the glands of the mouth are affected, or any remission of the symptoms takes place. In some cases, more than 1000 grains of calomel have been given, and several ounces of mercurial ointment have been rubbed in, not only with impunity, but with evident success.—In general, when the salivation commences, the fever and irritation at the stomach subside. Nevertheless, it will be necessary to continue the frictions, in a more moderate degree, to support the flow of saliva.

Although Dr. D. does not pretend that this mode of treatment is uniformly efficacious, yet, on comparing it with any other in use, it is, in his opinion, *eminently successful*, and affords the patient a double chance; because it does not hinder the employment of any other means that could be devised, if mercury were not administered. The violence, however, with which the fever frequently attacks, leaves, in many cases, but little hope from any plan of cure whatever: hence, Dr. BLAIR justly observes, that there are instances, where the disease is *determinedly fatal*, or where the animal functions are, from the beginning, so deranged, that there are no possible means of restraining the morbid motions;

and dissolution necessarily takes place. In more favourable circumstances, however, Dr. DANCER remarks, that the sore mouth, resulting from the use of mercury, though often very distressing, is seldom attended with any danger, or inconvenience of long duration. He quotes, on this occasion, Mr. BLAIR, who, in his late publication on the use of the *nitric acid*, says, that although this sometimes causes salivation, yet it is the most powerful means of allaying ptyalism, induced by mercury. Indeed, this affection of the mouth is not easily removed; but it may be greatly alleviated by the frequent use of proper gargles, such as the following, directed by Dr. DANCER:—Sage-tea, 1 pint; vinegar, 4 oz.; and honey, 1 oz.;—or, sage-tea, 1 pint; honey, 1 or 2 oz.; and alum, 1 dram.—The following gargarium we can recommend, from the frequent experience of its good effects in similar cases, namely: Equal parts of distilled vinegar and lime-water; adding a small portion of syrup of red roses, sufficient to sweeten the mixture.

The Peruvian bark may, occasionally, be given in the latter stages of the yellow fever, to complete the cure; but, as it is not always found to agree, Dr. DANCER concludes with saying, that “food and wine are the only things farther required.”

However inconsonant to theory, or to preconceived notions, this mode of treatment may appear to others, Dr. DANCER affirms, that “*it has stood the test of experience, and ought to be adopted, till a better one has been discovered.*”—Having thus fairly stated his practice, in this virulent disorder, he briefly recapitulates that of other physicians; and, as it may be of some service

service to persons, who reside in those tropical climates, or propose to visit them at any future period, we shall also subjoin a concise view of the various modes of treating this malady, practised by Drs. HILLARY, MOSELEY, RUSH, CLARK, BLANE and JACKSON.

With a view to moderate the rapid motion of the fluids, and to abate the violence of the yellow fever, during the first two days, Dr. HILLARY directs blood-letting, in the proportion of from 12 to 20 oz. according to the age, strength and other circumstances attending the case of the patient. The next indication is, to evacuate putrid bile, and corrupted humours, with such expedition as may be consistent with safety: hence Dr. H. advises small but frequent draughts of warm water to be swallowed, with the occasional addition of a little oxymel, green tea, &c.; when a grain, or a grain and a half, of crude opium is given, in order to compose the stomach after the violent retching, pain, and anxiety, necessarily occasioned by severe vomiting. And, as this organ is unable to retain either solid or fluid matters, the body should be kept open, by means of a mild purging clyster. The third indication is, to prevent the putridity of the fluids, and also the approach of gangrene, by exhibiting proper antiseptics:—For such purpose, Dr. H. prescribes a slight infusion of the Virginian Snake-root; as it braces the stomach, and enables it to bear the Peruvian bark.—A more particular account of Dr. HILLARY's treatment, may be found in his "*Observations on the Air and Diseases of Barbadoes.*"

Dr. MOSELEY recommends repeated bleeding in the first stage,

and continued purging with vitriolated tartar.

Dr. RUSH bleeds copiously and repeatedly; gives purgatives composed of calomel and jalap; then continues the calomel alone, till it affects the mouth. He conceives, that as the symptoms of the yellow fever are extremely violent, and its progress is uncommonly rapid, the most efficacious remedies ought to be employed, as early as possible. Hence *venesection* should, in his opinion, not be deferred beyond the first day; for it is of peculiar service to persons of robust and plethoric habits, especially such as have recently arrived from Europe. And, though this operation may not be performed sufficiently early to save life, yet it contributes greatly to relieve the sufferings of the patient. Farther, it will be advisable to take some blood, every day, while the fever continues: the quantity to be drawn depends on the state of the pulse, and that of the weather. Thus, Dr. RUSH found two bleedings sufficient to subdue the fever in September (the hottest month in America); but, in proportion as the violence of the inflammatory fever increased, it was deemed necessary to take from 12 to 20 ounces, twice, and in some cases, three times, in the course of the day. The blood appeared thick and sily; nay, it is a remarkable fact, that patients of every age can support the loss of that fluid, much better in the yellow, than in any other inflammatory fever. After *venesection*, purgatives were administered: with this intention, small doses of calomel, consisting of 2 or 3 grains, taken every hour; or, of 5 grains, combined with half a grain of opium;

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um; or, of 10 grains of calomel mixed with 15 grains of jalap; to be swallowed every 5 or 6 hours, have been prescribed by Drs. RUSH, CLARK, and other practitioners, with the best effect. Instances have occurred, in which patients have taken from 100 to 230 grains of calomel, within three or four days; in all of whom the violence of the disease abated, immediately after salivation commenced.—Blisters, applied to the legs and thighs, have likewise proved very useful.

According to Dr. JACKSON, great benefit has been derived from the affusion of cold water on the body of the patient, after having lost 20 or more ounces of blood. But, as this remedy has in some cases produced contrary effects, from being injudiciously employed, Dr. BLANE proposes the application of cloths soaked either in cold water, or in a mixture of that fluid and of vinegar: by such treatment, patients have been recovered, whose cases were apparently desperate.

As vomiting is the most distressing symptom in the yellow fever, various remedies have been proposed, with a view to check it, and to dispose the stomach for the reception of the Peruvian bark, or other tonics and antiseptics. With this intention, the saline draughts above mentioned, when in a state of effervescence, have been advantageously swallowed. Similar effects have resulted from the use of acid juices, such as those of oranges, and lemons, combined with wine, hot water, sugar, and nutmeg; then succeeded by frequent doses of magnesia and mint-water.—M. DESPORTES affirms, that milk, boiled with a little flour or bread, and given repeatedly, in

the quantity of one spoonful, operated more powerfully than any other remedy, for stopping bilious vomiting. Dr. BLANE, however, states, that this symptom was relieved by fomenting the stomach with *stupes*, or cloths, dipped in a decoction of bark, and sprinkled with camphorated spirits, or with the tincture of bark. But the most efficacious means, which he prescribed for checking such symptom, was that of blisters laid on the stomach: these were attended with the greatest success; and his practice has been justly recommended by Drs. CLARK, and MACLEAN.

When the irritation of the stomach has subsided, Peruvian bark may be administered; and, if such drug disagree, it may be given in the form of a clyster. Farther, it may perhaps be of some service to try the *essence of spruce*; as that vegetable preparation has been retained on the stomach, when every other remedy was discharged by the mouth:—it must be diluted with hot water, in the proportion of 3 oz. to one quart; and half a pint of the solution should be swallowed every two hours.

Lastly, in the more advanced stages, camphor combined with opium, may be given with advantage, particularly in the evening; as perspiration and sleep will thus probably be procured, and consequently the patient will be greatly relieved.

During the continuance of the yellow fever, few patients are able to take any food: they ought, therefore, to be kept as quiet as possible; and should endeavour to dispel all intense thought or care; for anxiety cannot fail to aggravate the violence of the disorder.

Those

Those of our readers, who wish to acquire more extensive information respecting this terrible scourge, in all its various modifications, will meet with complete statements in Dr. CLARK'S "*Treatise on the Yellow Fever, as it appeared in the Isle of Dominica,*" &c. 8vo. Murray and Highley, 3s. 6d.;—in Dr. JACKSON'S "*Outline of the History and Cure of Fever,*" &c. 8vo. 5s.;—in Dr. RUSH'S "*Account of the Bilious Remitting Fever, as it appeared in the City of Philadelphia, in the Year 1793,*" 8vo. Mawman, 6s.;—in Dr. MACLEAN'S "*Inquiry into the Nature and Causes of the great Mortality among the Troops at St. Domingo,*" 1797, 8vo. 7s.;—and in Dr. BLANE'S valuable "*Observations on the Diseases of Seamen,*" 3d edit. 8vo. 1799, 7s. Murray and Highley.

YELLOW-HAMMER, or *Emberiza citrinella*, L. is a well-known diminutive bird, which inhabits Britain, and other parts of Europe: according to Mr. PENNANT, its bill is of a dusky hue; the crown of the head, and the belly, are of a pale yellow, or straw-colour; the hinder part of the neck is tinged with green; and the breast is of an orange-red.

Yellow-hammers frequent meadows, where they construct their large flat nests of dried moss, roots; and horse-hair; and the female lays six white eggs, streaked with purple veins.—These birds are of considerable service to the husbandman, by devouring innumerable insects during the summer; but, in winter, they resort for sustenance to farm-yards, in common with sparrows and other birds.

YELLOW-RATTLE, *Coxcomb*, or *Penny-grass*, *Rhinan-*

thus Crista-galli, L. a native plant, growing in meadows, pastures, and woods; blowing in the months of June and July.—This vegetable sometimes overspreads whole meadows with its yellow flowers: in a green state, it is eagerly eaten by cattle; but, when dry, it forms a hard and tough fodder. Hence, careful farmers cut off the flowers, before the seed attains to maturity, in order to prevent its propagation.

YELLOWS, or **JAUNDICE**, in farriery, is a disorder to which horses are occasionally subject: it is known by the dusky-yellow appearance of the eyes, the inside of the mouth, and of the lips. The animal loses all his vigour, and refuses to take any food; a slow fever prevails, which increases, together with the yellowness, according to the malignancy of the disease. His dung is hard, dry, and of a pale yellow or green cast: the urine is of a dark-brown colour; and is discharged with great pain and difficulty: after it has lain for some time on the pavement of the stable, it acquires a bloody hue. In a short time, if the horse be neglected, he becomes delirious and frantic.

When aged animals are thus attacked, there is little prospect of recovery; but, if the distemper be recent, and the horse young, it will be advisable to adopt the treatment already pointed out, vol. ii. p. 508. Should no relief be obtained in the course of two or three days, the animal must be bled copiously; and the following laxative clyster be injected: Let two handfuls of marsh-mallows; one handful of chamomile flowers; and one ounce of fennel-seed, be boiled in three quarts of water, till one-third be evaporated: the liquor must then

be strained, and incorporated with 4 oz. of treacle, and a pint of linseed, or any common oil.

After such clyster has been injected, it will be necessary to administer two or three purges, each consisting of $1\frac{1}{2}$ oz. of pulverized Indian rhubarb; 2 drams of saffron; and 6 drams of socotrine aloes, mixed with syrup of buckthorn; which ought to be given once in 48 hours: on the intermediate days, the following balls and drink should be introduced between each dose: Take half an ounce of Æthiops mineral; a similar quantity of millepedes; and 1 oz. of Castile soap: let them be formed into a ball, and washed down with a decoction made of 4 oz. of madder-root; the same weight of turmeric; half a pound of the sliced roots of burdock; 4 ounces of Monk's rhubarb; and 2 ounces of sliced liquorice: these ingredients must be boiled in one gallon of *forge-water*, till one quart be evaporated; when the liquor should be strained, and sweetened with honey.

By this treatment, the violence of the disease will generally abate in the course of a week, or ten days; a change which may be ascertained by the eyes and mouth losing part of their yellow cast; though it will be advisable to continue the medicine above directed, till such colour totally disappear: when the animal is in a state of recovery, a few purges (see vol. ii. p. 489) should be given, and he ought to be moderately exercised, in order to recruit his exhausted strength.

YELLOWWS, a disorder affecting black cattle, which, if it be not timely attended to, will induce the Murrain, and other fatal distempers.

Symptoms.—Every morning, a

general tremor over the animal, particularly in the hinder legs, loins, and thighs; the eye-lids appear hollow; the whole body assumes a yellow cast; the nose is dry; and, if the creature have taken a severe cold, the ears hang down; the dewlap, shoulders, and loins swell; the udders of cows become tumefied, and produce little milk; which, in a few days, acquires a peculiarly yellow tinge, coagulating when boiled; and, lastly, the fore-teeth become so loose as to be in danger of dropping out.—It will be necessary to observe these symptoms with accuracy, and particularly that first mentioned; because, if they remain unnoticed for a few days, the disease will settle on some of the interior parts, and be followed by uncommon weakness, wheezing, dropsy, or other fatal distemper.

This malady is conjectured to proceed from the folds, in the inner membrane of the neck of the gall-bladder, becoming too weak to perform their functions; so that the bile, instead of being conveyed into the intestines, preternaturally forces itself into the biliary ducts, whence it passes through the *vena porta*, and mixes again with the blood: hence, that fluid acquires a corrosive quality, becomes thick or sizy, and consequently circulates slowly throughout the system.—From such disorganization, the livers of the diseased animals are incapacitated from performing their functions, so that the supply of bile is inadequate to the quantity thus unnaturally expended; and the blood concretes in different parts of the body, forming painful tumors, both internally and externally.—This distemper is most to be

be apprehended, for about five weeks, in the commencement of the spring and autumn, when the days are warm, and the evenings cold: in those seasons, the grass being very rich and succulent, the animals are apt to eat too freely.

The following remedies have been recommended, as being peculiarly efficacious in removing the *yellow*s. First, take a handful of the tops of rue, and a similar portion of the greater celandine: let them be cut into small pieces, mixed with 1 oz. of pulverized turmeric (or, if this cannot be procured, of red Saunders-wood), and boiled in three pints of stale beer or ale. When the liquor is lukewarm, it must be given to the animal, and the dose repeated at the expiration of two days. Should a diarrhoea or *scouring* take place, the following preparation may be administered in the interval: Let 2 lbs. of oak-bark be boiled in 1 gallon of water, till one-fourth part be evaporated: it is then to be strained, and 2 lbs. of rice should be boiled in such liquor, till it be soft: half a pound of burnt crust of bread, taken from the lower part of a loaf, and 2 quarts of milk, are next to be added; and the whole is suffered to simmer for about 20 minutes, when it should be divided into two portions, and given in a warm state to the animal.—By this treatment, cattle may be recovered in the course of a few days; provided they have not been too long neglected: for, when the disease has gained ground, such remedies ought to be continued for an additional length of time.

YELLOW-WEED. See DYER'S-WEED.

YEW-TREE, the COMMON, or *Taxus baccata*, L. a native of Bri-

tain, and other parts of Europe, as well as of America: it grows in mountainous woods, hedges, and rocky soils; producing its flowers in March or April, which are succeeded by bright-red, soft, oblong berries, containing a mucilaginous white juice, and arriving at perfection in September.

The yew-tree thrives most luxuriantly in a moist, loamy soil: it may be propagated by sowing the ripe berries in autumn, in a shady bed of fresh earth, and covering them to the depth of half an inch, with similar mould: when the young plants appear, they ought to be carefully weeded, and occasionally watered in dry seasons.—In this situation, they must remain for two years; after which they ought to be removed, in the month of October, into beds of unmanured soil, at the distance of six inches from each other, and in rows one foot asunder; being gently watered till they have taken root. Here the plants should again continue for two years; at the expiration of which, they must be transplanted, in autumn, into a nursery, and placed 18 inches from each other, in rows three feet apart. When the young trees have stood three or four years in the nursery, it will be advisable to set them, in September, or October, in dry ground; and, at length, in the subsequent spring, to place them in cold, moist situations, where they are designed to remain.—The period of their growth is computed at 100 years; and their duration in the ground, at four centuries.

Formerly, the yew-tree was cultivated, in Britain, chiefly for the manufacture of bows; but, since these implements of war have been superseded by fire-arms, it is generally

nerally raised as an ornament to parks and plantations, on account of its ever-green leaves. This useful tree admits of being frequently pruned; and may be made to assume any particular figure: hence the gardens of our forefathers were filled with ships, birds, quadrupeds, men, and other vegetable monsters. But such absurd fancies are gradually disappearing; a more natural system of horticulture is making rapid progress; and the yew is at present advantageously planted in hedges, as a fence for orchards and shrubberies, against severe winds.

The wood of this tree is hard and smooth; beautifully veined with red streaks; admits of a fine polish; and is almost incorruptible: hence it is advantageously employed by turners and cabinet-makers, for manufacturing spoons, cups, as well as tables, chairs, and various other articles. It is also usefully converted into cogs for mill-wheels, axle-trees, flood-gates for fish ponds; and may perhaps be effectually substituted for *box*; so that considerable sums of money might be annually saved, which are now exported to the Levant, in order to supply engravers, and other artists, with that wood.

The red berries of the yew-tree have a sweetish taste, and abound with mucilage: they are not only devoured by hogs and birds, without any pernicious effects resulting from them, but are also frequently eaten with impunity by children; though, in some persons, this fruit is apt to produce noxious effects, especially if the stones be swallowed. We are, nevertheless, persuaded, that a very copious and strong spirit may be easily extracted from these berries, by distilla-

tion; and that their conversion to this purpose might annually save many thousand bushels of grain, which are unnecessarily wasted in the *still*, while the abundant vegetable productions of the woods, hedges, and commons, are suffered to decay, or are heedlessly left to become a prey to wild birds, and other animals.—See also *SPRITS*, p. 118.

The leaves of the yew-tree are reputed to be poisonous to the human species, as well as to cattle of every description. Attempts, however, have lately been made, to employ them for feeding *horses*, in times of scarcity; and, if our account be accurate, we have read in some recent publication, that such leaves were given to those animals with perfect safety, when cut together with hay or straw, so 'as to use, at first, only the tenth or twentieth part of this foliage, and *gradually* to increase the proportion of the latter, and to reduce that of the former, to one-half, or even a smaller quantity. Thus, it appears to be perfectly consistent with reason and analogy, that the oily and astringent principle of the yew-tree leaves may be corrected, by sheathing it with a large portion of balsamic hay, and absorbent straw; yet we cannot, on this occasion, speak from positive experience.—According to agricultural writers, the *loppings* and *bark* of this tree are equally pernicious to cattle, especially when in a half-dried state; several sprigs having been found in the stomachs of dead animals, entire, or undigested.—It is, however, an erroneous supposition, which still prevails in some country places, that the very shade of its foliage is hurtful to animal life.

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On the other hand, BECHSTEIN informs us, that the wood of the yew-tree, when reduced to powder by a file, mixed with paste, and baked in an oven, has been highly extolled in Germany, as a sovereign remedy for the bite of a mad dog: it is, therefore, taken in doses of half an ounce.

DAMBOURNEY observes, that a decoction of yew-tree berries imparts a handsome *chamois-dye* to wool previously immersed in a weak solution of bismuth.—On boiling the red root of this tree, together with the bark of the common birch-tree, he obtained a beautiful cinnamon colour, with a *mordoré* tint; but the wool was first boiled for a considerable time in a solution of tin: and, by adding alum, the dye assumed an *aurora*, or bright-red colour.

YOKE, in agriculture, is a wooden frame, adapted to the necks of oxen; by means of which they are coupled and fastened to the plough, or other vehicle. It is composed, 1. of a thick piece of wood, that passes over the neck, and is strictly called the *yoke*; 2. of a *bow*, which encompasses the neck; and, 3. of the *wreathings* or *stitchings*, that serve to connect the whole. Beside these parts, there are employed, a ring, denominated the *yoke-ring*; and a chain, for securing the traces.

The yokes chiefly used in England, are those known under the name of the *Roman Ox-yokes*, which are preferable to the cumbersome frames formerly employed; because the animals thus acquire a greater power of draught. As, however, the Roman yokes are apt to chafe the necks, and the oxen are compelled to draw with their noses close to the ground, we conceive the *Portuguese*, and *French* methods of

working oxen to be the most effectual; and, having already given an account of them, we refer the reader to vol. iii. pp. 323-24.

YOLK. See EGG.

YOUTH, or ADOLESCENCE, in general, is that happy period of human life, which commences from childhood; continues as long as the fibres increase in dimensions or firmness; and terminates at full growth: among the Romans, it was computed from the age of 12 to 25, in males, and to 21, in females. In modern times, the term adolescence, includes the age of from 15 to 25 years, and sometimes to 30.

During this important stage of our existence, the principal revolutions take place, both with respect to mind and body. While the latter progressively acquires muscular energy, and adopts a more solid deportment, the faculties of the former begin to unfold; and the young member enters into society, with all the advantages which arise from the tender regard, interest, and indulgence, evinced by the generality of mankind, towards inexperienced youth.

As it would be incompatible with our limited plan, to enter into a disquisition respecting *all* the mental and bodily imperfections, and diseases, incident to young persons of either sex; or to analyze the changes taking place during the transition from the period of childhood to that of puberty, we shall here discuss only the *dangerous influence of the power of imagination, on the juvenile character*.

None of the mental faculties exhibit such interesting and diversified phenomena, as that of IMAGINATION. While this powerful agent is restrained within due limits,

min, it often supplies the place of a benevolent guide, through the intricate meanders of life, where we frequently meet with more appearance than reality; and in which it is of the utmost importance to be impressed with a due and lively sense of the good and the beautiful, as well as of virtue and truth. On the contrary, no sooner are the boundaries of the *imagining faculty* transgressed, than we are involuntarily led to submit to this dreadful tyrant, who is capable not only of disturbing our repose and happiness, but even to deprive his victims of life. Hence, it should be one of the most necessary maxims of intellectual nature, always to guard against this formidable power; and to regulate its reciprocal influence; so that we may maintain a certain superiority. But, in order to evince the essential necessity of adopting this rule of practical life, and at the same time to demonstrate the danger attending the neglect of it, especially to *youth*, we shall quote an instance related by Prof. HUFELAND, in one of his admired *Popular Essays*, in German; of which no translation has yet appeared.

A student at Jena, about 16 years of age, having a weak and irritable nervous frame, but in other respects healthy, left his apartments during twilight, and suddenly returned with a pale, dismal countenance; assuring his companion that he was doomed to die in 36 hours, or at 9 o'clock in the morning of the second day. This sudden change of a cheerful young mind naturally alarmed his friend; but no explanation was given of its cause. Every attempt at ridiculing this whimsical notion was fruitless; and he persisted in affirm-

ing that his death was certain and inevitable. A numerous circle of his fellow-students soon assembled, with a view to dispel those gloomy ideas, and to convince him of his folly, by arguments, satire, and mirth. He remained, however, unshaken in his strange conviction; being apparently inanimate in their company, and expressing his indignation at the frolics and witticisms applied to his peculiar situation. Nevertheless, it was conjectured that a calm repose during the night would produce a more favourable change in his fancy; but sleep was banished, and the approaching dissolution engrossed his attention during the nocturnal hours. Early next morning, he sent for Prof. HUFELAND, who found him employed in making arrangements for his burial; taking an affectionate leave of his friends; and on the point of concluding a letter to his father; in which he announced the fatal catastrophe that was speedily to happen. After examining his condition of mind and body, the Professor could discover no remarkable deviation from his usual state of health, excepting a small contracted pulse, a pale countenance, dull or drowsy eyes, and cold extremities: these symptoms, however, sufficiently indicated a general spasmodic action of the nervous system, which also exerted its influence over the mental faculties. The most serious reasoning on the subject, and all the philosophical and medical eloquence of Dr. HUFELAND, had not the desired effect; and, though the student admitted that there might be no ostensible cause of death discoverable, yet this very circumstance was peculiar to his case; and

and such was the inexorable destiny of his fate, that he must die next morning, without any visible morbid symptoms.—In this dilemma, Dr. H. proposed to treat him as a patient. Politeness induced the latter to accept of such offer; but he assured the physician, that medicines would not operate. As no time was to be lost, there being only 24 hours left for his life, Dr. H. deemed proper to direct such remedies as prove powerful excitants; in order to rouse the vital energy of his pupil, and to relieve him from his captivated fancy. Hence he prescribed a strong emetic and purgative; ordered blisters to be applied to both calves of the legs, and at the same time stimulating clysters to be administered. Quietly submitting to the Doctor's treatment, he observed, that his body being already half a corpse, all means of recovering it would be in vain. Indeed, Dr. H. was not a little surprised, on repeating his visit in the evening, to learn that the emetic had not, or but very little, operated; and that the blisters had not even reddened the skin. Now the case became more serious; and the supposed victim of death began to triumph over the incredulity of the Professor, and his friends. Thus circumstanced, Dr. H. perceived, how deeply and destructively that mental spasm must have acted on the body, to produce a degree of insensibility from which the worst consequences might be apprehended.—All the inquiries into the origin of this singular belief, had hitherto been unsuccessful. Now only, he disclosed the secret to one of his intimate friends, namely, that on the preceding evening he had met with a white figure in the pas-

sage, which nodded to him; and, in the same moment, he heard a voice exclaiming: "the day after to-morrow, at nine o'clock in the morning, thou shalt die."—He continued to settle his domestic affairs; made his will; minutely appointed his funeral; and even desired his friends to send for a clergyman; which request, however, was counteracted. Night appeared; and he began to compute the hours he had to live, till the ominous next morning: his anxiety evidently increased with the striking of every clock within hearing. Dr. H. was not without apprehension, when he recollected instances in which mere imagination had produced melancholy effects. But, as every thing depended on procrastinating, or retarding that hour in which the event was predicted; and on appeasing the tempest of a perturbed imagination, till reason had again obtained the ascendancy, he resolved upon the following happy expedient: Having a complaisant patient, who refused not to take the remedies prescribed for him (because he seemed conscious of the superior agency of his mind over that of the body), Dr. H. had recourse to *laudanum*, combined with the extract of *hen-bane*: 20 drops of the former, and two grains of the latter, were given to the youth, with such effect, that he fell into a profound sleep, from which he did not awake till eleven o'clock on the next morning. Thus, the prognosticated fatal hour elapsed; and his friends waiting to welcome the bashful patient, who had agreeably disappointed them, turned the whole affair into ridicule. The first question, however, after recovering from this artificial sleep, was

was the hour of the morning : but, on being informed, that his pre-
sages had not been verified by ex-
perience, he assured the company,
that all these transactions appeared
to him not unlike a dream ; and
he could not conceive how he had
been subject to such folly. Since
that period, he has enjoyed a per-
fect state of health, and has been
completely cured of his fancy.

There are, nevertheless, several
instances recorded, in which per-
sons have truly predicted the day
and hour of their death. In the
17th century, it was a fashionable
practice among the higher classes,
to apply to an *astrologer*, for learn-
ing the accurate duration of their
lives. Such aberration from the
human intellect, could be ascribed
only to an absurd or defective sys-
tem of education ; when youth
were not taught to discriminate be-
tween natural causes and effects ;
or, when parents granted every
species of indulgence, which alike
excited their sensual desires, and
pleased a wild, disordered imagi-

nation.—Many, indeed, are the
gradations, in which that peculiar
morbid sensation, generally termed
irregular fancy, displays itself un-
der different forms, even in mo-
dern times. It cannot be denied,
that the numerous phenomena of
nervous disorders, especially the di-
versified symptoms displayed by
hypochondriacal and hysterical per-
sons, doubtless originate chiefly
from the same source. We often
smile at such complaints as are
supposed to arise from a diseased
mind, but certainly not with jus-
tice. In short, there is no disorder
more to be dreaded, and none
has a more solid foundation, than
that in which the sensations of our
material nature, and the ideas of
our very existence, are in a manner
unhinged : nay, it is incomparably
more easy to sustain a *real* evil,
than to be tormented by an *imagi-
nary* one, the force and extent of
which cannot be ascertained.

YOUTH-WORT. See SUNDEW
the Round-leaved.

Z.

ZAFFRE, is the oxyd or calx of
cobalt, employed for imparting a
blue colour to porcelain and pottery
ware : it is prepared, according to
CRONSTEDT, in the following man-
ner.

When the cobalt is dug out of
the mine, it is first broken into
small pieces, and all heterogeneous
matters are carefully separated.—
The mineral is then submitted to
the action of stamping mills, in
which it is reduced to a fine pow-

der, that is sifted through brass
wire sieves. Next, the lighter par-
ticles are carried off by water, and
the cobalt is put into a reverberatory
furnace, terminating in a long ho-
rizontal gallery ; through which
the arsenic, usually mixed with the
mineral, sublimes : farther, the
cobalt is frequently stirred with
long iron hooks or rakes, till it
ceases to emit any fumes ; when
it remains in the form of a dark
grey calx, denominated *Zaffre*.

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Considerable quantities of this oxyd, are manufactured from the cobalt dug out of the mines in the Mendip-hills, and also in Cornwall; beside which, there are large supplies annually imported from Saxony:—such zaffre, however, is seldom pure; being mixed with a considerable proportion of pulverized flints.

The blue of zaffre is the most permanent of the different colours employed in glass-works; as it resists, unchanged, the most intense heat: hence, it is also advantageously used for giving various shades of blue to enamels, and to the crystal glasses that are made in imitation of lapis lazuli, turquoise, sapphire, and other precious stones.

ZANTHOXYLON, or, more correctly, **XANTHOXYLON**, **PRICKLY YELLOW WOOD**, or **YELLOW HERCULES**, is a native of Jamaica, and other tropical countries, where it grows to the height of 16 feet, and is about 12 inches in diameter. This straight tree somewhat resembles the common ash: the bark of the trunk is covered with numerous prickles; and the wood is of a bright-yellow cast.

The wood of the Xanthoxylon is chiefly employed for the heading of hogsheds, for bedsteads, and numerous other purposes: it also possesses remarkable medicinal virtues, which render it peculiarly serviceable to the inhabitants of the West Indies.

The pulverized bark of the roots, when sprinkled on ulcers, speedily and effectually removes these disgusting sores. The fresh juice, expressed from the roots, affords certain relief in the painful disease, termed *dry belly-ache*. This important fact was discovered in the

West Indies, by watching a female slave, who collected the root in the woods, and gave two spoonfuls of its juice to a negro, suffering under that colic, at an interval of two hours. Such medicine occasioned a profound, but composed, sleep of 12 hours; when all sense of pain, and other distressing symptoms, had vanished: the cure was completed, by giving an infusion of such expressed roots in water, by way of diet-drink.

Farther, the juice of the Prickly Yellow Wood, when preserved in rum, and administered in doses not exceeding a wine-glassful, has effectually removed the most obstinate epileptic fits; but Dr. HENRY has not mentioned the *manner* in which this preparation ought to be managed.

ZEDOARY, or *Kæmpferia*, L. a genus of exotic plants, consisting of two species; namely: 1. The *galanga*, Common Galangal, or Long Zedoary; which has long, thick, tuberous roots, and produces single white flowers, with purple bases; and, 2. The *rotunda*, or Round Zedoary, has thick, round roots, presenting whitish flowers, that are frequently tinged with green, yellow, red, and purple. Both species are natives of Siam: they may be raised in hot-houses, by dividing the roots in the spring, and planting them in pots of rich, light mould, where they should be copiously watered during the summer, but less frequently in the winter.

The roots of the Zedoary are imported in oblong pieces, about the thickness of a finger; or in round masses, generally one inch in diameter; paying a duty of 6½d. per lb. They possess an agreeable fragrance,

fragrance, but a bitterish aromatic taste; both of which may be imparted to water.

The Zedoary is a warm stomachic, and has been recommended in dyspeptic cases, for relieving flatulency, and invigorating the nervous system. Such root may be advantageously used by artisans, as an excellent yellow colour: and it may likewise be employed in painting with water-colours. For this purpose, it is prepared in the following manner: Boil 1 oz. of the root in a quart of water, till the fluid have sufficiently imbibed the colouring matter, for communicating a yellow tinge to paper: it is then to be filtered through a linen cloth. The decoction may be evaporated or dried in shells; after which, it may again be diluted, and will easily spread with the pencil.

ZINC, or SPELTER, is a semi-metal, naturally obtained in a state of combination with different minerals, in England, Hungary, and other parts of the globe: it is of a whitish colour, nearly resembling that of lead, though it does not so speedily tarnish.

Zinc melts a short time before ignition; but, when heated to redness in the open air, it is liable to combustion, and burns with a dazzling blaze; so that a loose white oxyd is precipitated, which is known under the name of *flowers of zinc*.

This crude semi-metal is of great utility in the arts. Combined with gold, in equal portions, it forms a hard, white compound, that admits of a fine polish, and may be advantageously manufactured into *specula*, for optical instruments.

Zinc and tin, melted together, produce a kind of pewter; and, as

the former spreads more uniformly, while it is much harder, and less fusible than tin, it has been proposed as a substitute for the latter, in tinning copper-vessels.

Spelter and copper readily unite in the fire; provided the combustion of the former be carefully prevented during the process: in this state, it forms a metal, distinguished by the general name of *yellow copper*; but which is divided into several sorts, according to the respective proportions contained in the alloy. Thus, three parts of copper and one of zinc, constitute BRASS;—five or six of the former, and one of the latter, afford PINCHBECK.—*Tombac* is composed of a still larger proportion of copper to that of zinc: It is of a deeper red than pinchbeck, and bears the name of its inventor. *Prince's Metal* consists of a larger proportion of zinc than either of the preceding compositions.—*Similor*, or *Manheim gold*, resembles pinchbeck: it is manufactured into spurious leaf-gold, laces, and similar shewy articles.

Zinc is dissolved in all acids; though the sulphuric is most frequently employed; and, in the proportions stated, p. 275, of the present volume, it forms white VITRIOL.

An useful substitute for *white-lead*, in painting houses, has lately been discovered in zinc, by M. de MORVEAU. He directs this mineral to be calcined in a crucible, placed horizontally in the cavity usually made for retorts, in reverberatory furnaces. The oxyd thus obtained, is then to be washed in water, with a view to separate such particles as may not have been perfectly calcined; and, when it is reduced to powder, a small portion of

of earth of alum, or chalk, must be added; in order to give it a body. When this pigment is to be used, it will be necessary to form the powder into a heap, leaving a small hole in the middle, into which oil must be gradually poured, till it be reduced to a proper consistence; when the paint should be laid on, with a soft brush. The whitest drying oil must be procured, such as that obtained from poppies, if a white paint be designed; because coloured oil imparts a tinge that impairs its whiteness; but, if a yellowish or other shade be intended, any drying oil will answer the purpose.—M. MORVEAU observes, that such paint is perfectly harmless, emitting no hurtful effluvia; and, though it does not dry so speedily as that prepared of white-lead, yet it is not only more wholesome, but also eventually cheaper; as a smaller portion of zinc will be required.

In March, 1796, a patent was granted to Mr. JOHN ATKINSON, for his invention of a white paint, prepared from zinc, which may serve as a substitute for that of white-lead. He directs the former mineral to be first submitted to a reverberatory furnace, for six hours; in order to disperse all the ferruginous particles which it may contain. Next, the zinc is to be reduced to powder, by the action of a mill, and mixed with one-eighth part of pulverized charcoal, by weight; after which it must be removed to a *close, or muffled furnace*, provided with two apertures, one on each side, "and (as the patentee expresses himself), dilated at the end from the furnace, by a distance of about 20 feet;" the other end joining the body of the furnace: such apertures should each

be furnished with a door at the farthest extremity, and which ought to be sufficiently large to admit a man to enter, for the purpose of collecting the colour. Thus, the zinc must be introduced into the furnace, through the top or upper part: when it becomes red hot throughout, a large dense, white cloud, with a bright blue flame, will pass into the receptacles or apertures above-mentioned, where it will collect in the form of a pure, white metallic calx.

The oxyd of zinc is now to be diluted with water, and ground or triturated in a proper mill: from this machine it is conducted, by means of gutters or spouts into fine sieves, whence it passes into several cisterns full of water, communicating with each other by similar gutters; so that the finest particles float into the farthest reservoirs. After standing about 24 hours, the water may be drawn off, and the colour collected into pans, receivers, or other vessels, capable of bearing heat, in which they are dried; and in this state, the paint will be ready for sale; but previously to its application, it ought to be properly levigated.

According to M. RINMAN, a fine *green* colour for painters may be procured from the oxydes of cobalt and zinc. He directs any portion of cobalt-ore to be dissolved in the nitro-muriatic acid (AQUA REGIA), and to be mixed with half that quantity of nitrat of zinc: a lixivium of pot-ash is then to be added; and, when the precipitate is ignited to whiteness, it will be fit for use.

Beside its utility in the arts, *zinc* is of considerable service in medicine.—Its *flowers* are advantageously employed as an antispasmodic,

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particularly in epilepsy, and in the acute spasms of the stomach, to which persons of delicate constitutions are subject: they have also been given with success in some cases of dry asthma. The dose is from one to two grains, taken twice in the day, and gradually increased to 8 or 10 grains; but, being a very powerful remedy, it ought never to be resorted to, without medical advice.

For an account of the affections in which the *vitriol of zinc* may be of service, the reader will consult the article *VITRIOL*.

ZIZANY, the *WATER*, or *Zizania aquatica*, L. is a native of North America, where it grows in wet and marshy situations.—The root of this vegetable is fibrous, and strikes forth many angular, smooth

stalks of a serpentine form. The panicle on the central stalk is generally four feet long, while those on the others never exceed twelve inches. The large, oval, yellowish, mealy seed attains to maturity in September, and has the agreeable taste of rice; on which account it is much esteemed by the American Indians, who carefully collect and convert it into *BREAD*, or other culinary dishes. Hence *LINNÆUS* recommends its culture in situations abounding with reeds, and producing no other useful plant. In such places, we are persuaded, many and important advantages might be derived from the introduction of the zizany into marshy counties, especially those of Lincoln, Cambridge, &c.

The *DOMESTIC ENCYCLOPÆDIA* being now arrived at the conclusion of the Alphabet, various motives have induced the Editor to offer an Appendix, or Supplement, with a view to render this *Dictionary of Facts* as complete as the extent of the work, and diligent research would admit. Among these, will occur numerous articles of greater or less importance: the propriety of inserting them, however, was not sufficiently evident, till their respective connexion with the subsequent parts of the arrangement, could be more clearly ascertained. Others again, being of a more recent date than the commencement of this publication; and containing many new, and valuable hints, for the advancement of Rural and Domestic Economy, the Reader will probably meet with information, alike curious and useful.—In consulting the *Domestic Encyclopædia*, therefore, he is requested to avail himself of the annexed *SUPPLEMENT*; by which he may be enabled to form a tolerably correct idea of the various improvements suggested in the course of this practical work.

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S U P P L E M E N T.

A C A

ACACIA, the FALSE, or *Robinia pseudo-acacia*, L. is a native of North America, and the northern parts of Asia. This beautiful and valuable tree flourishes best in sandy soils, mixed with light black earth, especially in the vicinity of brooks, springs, or rivers; where it grows with uncommon rapidity. It may be propagated by setting the seeds; and, when it is once introduced, numerous plants may be obtained, by cutting its roots near the surface of the ground.

The leaves and tender shoots of the False Acacia are eagerly eaten by cattle, particularly by sheep; and they also afford a wholesome fodder. Being very hardy, this tree retains its verdure during the severest winters. As the roots extend rapidly along the surface of the earth, and shoot up numerous suckers, the Acacia may be advantageously planted on the banks of rivers, for consolidating and securing the soil from the encroachments of the current: farther, its wood is eminently adapted to ship-building; and, though inferior in point of durability to the oak, it is perhaps preferable to any other timber for barges, and similar vessels of a small size.

The sweet and succulent roots of the False Acacia are well calculated for fattening hogs; and the

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leguminous seeds, after being divested of their acrid taste, by infusing them in different waters, and afterwards ground into meal, are by the Tonguslan Tartars converted into a wholesome bread: these seeds are also eagerly eaten by poultry, which may thus be speedily fattened.

It has been ascertained by experiments, that the leaves of this tree, when prepared in the same manner as *indigo*, may with great advantage be substituted for that expensive dyeing drug. The foliage of the smaller variety of the False Acacia, however, is reputed to be better adapted for such purpose: its culture corresponds with that above stated; and it certainly merits to be more generally cultivated in ornamental shrubberies, where it thrives rapidly, and produces elegant odoriferous yellow flowers, which abundantly supply bees with honey.—The seeds of both varieties also afford a large proportion of expressed oil.—It deserves to be noticed, that the yellowish wood of these trees, though hard and tough, is very brittle while the plants are young, and they ought, therefore, in exposed situations, to be supported by stakes. Lastly, it is remarkable, that no part of the Acacia is subject to the depredations of vermin or insects.—Dr. MEDICUS, a prolific, though esteemed German author,

thor, has published several volumes on the culture and useful properties of the *Acacia*.

ACIDS.—The *citric acid* is a concrete juice obtained principally from lemons: it has also been discovered in the red whortleberry, cranberry, bird-cherry, as well as in the fruits of the woody nightshade, and the dog-rose.

In order to divest this acid of the mucilaginous or other foreign particles, with which it is frequently combined, the juice obtained by pressure from lemons, or similar fruit, should first be heated, then strained, filtered, and afterwards saturated with pulverized chalk, or the carbonate of lime, till all effervescence ceases. The precipitate, formed by this process, is called *citrate of lime*; and, being insoluble, it must be separated from the liquor, washed with cold water till it become tasteless and perfectly white: next, it ought to be decomposed in a gentle heat, by adding half its weight of sulphuric acid diluted with six parts of water. As soon as the mixture becomes cool, it should be filtered; when the pure citric acid will be disengaged from the sulphate of lime.—Such acid may also be obtained in a crystalline form, by previously filtering, and then evaporating it to the consistence of a clear syrup, which concretes on exposing it to a cold temperature.

Dr. BRUGNATELLI has lately published a new method of *preserving and concentrating the acid of lemons*. He directs the newly expressed juice to be strained through fine linen, a small portion of 'rectified spirit of wine to be added, and the whole to be deposited for several days in a bottle closely stopped: thus, a considera-

ble mucilaginous sediment will be formed, but which may be easily separated, by passing the liquor through blotting-paper. If the quantity of spirit employed be considerable, it may be drawn off by distillation in a glass retort: in the contrary case, the juice may be exposed for some time in a warm temperature, and the alcohol will readily evaporate, leaving a very clear acid of peculiar strength.

The *citric acid* affords an agreeable lemonade, by dissolving half a dram in two pints of water; adding a sufficient quantity of sugar, and *bitter-sweet*, which is prepared by rubbing the latter substance on fresh lemon-peels, till the essential oil be absorbed.

ACRE.—The *English statute acre* comprises 160 square poles, each of which contains $16\frac{1}{2}$ feet. The same measure of land, in *Scotland*, is regulated by the Scotch ell, which is $37\frac{2}{3}$ English inches: thus, 36 square ells make 1 fall; 40 falls, 1 rood; and 4 roods constitute an acre; so that the proportion of a Scotch to an English acre is nearly as that of 5 to 4.—The acre, employed in the Principality of Wales, is equivalent to 2 English ones; and the Irish acre is equal to 1 acre, 2 roods, and 19 perches $27\frac{1}{2}$ of English statute measurement.

AGRICULTURE.—Notwithstanding the fair prospects we have stated under this article, there are numerous obstacles that impede the progress of that inestimable art, in the British empire.—1. One of the most powerful impediments, is the general ignorance that still prevails among the managers of landed estates: this inconvenience, we are happy to observe, may gradually be removed, by establishments similar to

to that proposed by the Rev. Mr. Closs; an account of whose plan is inserted in the 9th vol. of the "*Letters and Papers of the Bath and West of England Society*."—By this praise-worthy institution, young men may, for a small premium, be qualified to undertake farms either on their own account, or to serve as bailiffs to landed proprietors; for they will be instructed in the principles of Agriculture, especially those of the Drill-husbandry, and in all the necessary duties of a farm, relative to both *rural* and *economical* affairs. 2. The impolicy of continuing to grant ill-regulated leases, by which a certain, and generally *erroneous*, rotation of crops is enforced; and 3. The burthen necessarily occasioned by the present system of *Tithes*. Farther, extensive wastes or commons still remain to be cultivated; and the system of agricultural legislation and police is so miserably defective, that innumerable petty frauds and thefts are with impunity committed in the fields of industrious farmers; because the trouble and expence of prosecuting depredators, are too great to be borne by persons who earn their bread by honest labour, and daily exertion. Such "shackles," Mr. MIDDLETON energetically observes, "cramp and paralyze every effort which can be made towards the improvement of this science; and, so long as the agriculture of this realm is compelled to endure them, any considerable improvement of the soil is utterly impracticable."—For a more detailed account of these abuses, with appropriate remedies, we refer the reader to that Gentleman's highly interesting "*View of the Agriculture of Middlesex*," &c. 8vo. 1798; and which was drawn up

for the consideration of the Board of Agriculture.

AIR.—In a late volume of the "*Annales de Chimie*," we meet with a memoir by M. DAYSUX, on the means of purifying infectious air; and which is extracted from a work of, M. GUYTON DE MORVEAU, who made numerous experiments with different matters, in order to ascertain those which were best calculated to prevent the diffusion of contagious atoms in the atmosphere. As, however, we cannot enter into an analysis of his experiments, we shall briefly state their results. According to these, *common vinegar*, possesses the power of decomposing contagious particles; but it does not operate in a perceptible manner, unless the infected substances be actually immersed in this acid, or be such as admit of being washed with large portions of it.—Radical vinegar, or the *acetic acid*, produces effects sufficiently rapid and powerful; but, on account of its high price, it can seldom be employed in considerable quantities.—The *nitric acid* is well calculated to destroy the putrid effluvia; but, as it cannot without great difficulty be divested of nitrous gas, the action of which is always prejudicial to the health of those who respire it, M. MORVEAU remarks, that the use of this remedy is still attended with great inconvenience. He is, therefore, of opinion, that the *muratic acid* affords very great advantages in dispelling contagion, by the uncommon expansibility of its vapours; which thus penetrate every part of the substance on which the operation may be performed. Nevertheless, he conceives the oxygenated *muratic acid* to be superior to every other remedy, both

for the celerity and facility with which it is diffused, and likewise for the certainty of its action; in consequence of which, it instantly destroys all putrid miasmata, that may either be floating in the air, or be fixed upon bodies.

It is a circumstance well known to persons conversant with chemistry, that wood, during combustion, yields one-sixth part of its weight in coal, while the remaining five-sixths of smoke (which contains a large proportion of inflammable air), are usually dissipated, without being subservient to any useful purpose. Hence, an apparatus has lately been contrived in France, by M. LEBON, for applying such smoke to the heating and illuminating of rooms at the same time. It is denominated a *Thermo-lamp*, and consists of a box or vessel, the smoke rising out of which, after being freed from all vapours and soot, is conveyed through very small tubes, that are concealed in the plaster of the walls or ceiling. Such tubes are made of oiled silk, but the orifice is composed of metal, to prevent the silk from burning, when the gas takes fire on coming in contact with the atmospheric air. Thus, the flame may be conducted in a moment from one apartment into another, without depositing either ashes, coals, or soot; so that, according to M. LEBON's assertion, chimnies become unnecessary. He farther states, that the fire, thus produced, does not require any particular care in supporting it, while it possesses this advantage, that the pure light may be made to represent flowers, festoons, or other ornamental objects; or, such fire may be so arranged as to emit its light from above, with the purest lustre.

ALMOND.—Although we have declined to give a particular description of the Almond-tree, yet as it is frequently cultivated in shrubberies, both on account of its beautiful flowers, and also for its fruit, we shall here add an outline of the manner in which it should be managed.

Almonds are propagated by *Inoculation*, or *budding* on plum or peach stocks, in the month of August, at such height as may correspond to that of the stem intended to be raised: at the expiration of two years, the trees may be finally planted out. If the soil be dry, this operation should be performed in October, when the leaves begin to decay; but, in case the ground be wet, the proper season is the month of February.

When the young trees are removed from the nursery, Mr. FORSYTH is of opinion, that they should never be cut, or pruned, "till the new shoots begin to break;" and, as these frequently perish during severe winters, that succeed wet autumns, when the wood is not well-ripened, he directs them to be cut down to the sound wood; care being taken to extirpate with the knife all cross shoots, so as to make the tree open in the middle, and to leave the principal shoots, according to their strength, from six to sixteen inches long. Those parts, which are affected with the *CANKER*, must also be cut out; and such excision ought farther to be extended to all decayed wood.

Almond-trees being very delicate, it will be advisable to place them in a southern aspect, and in a sheltered situation, either among tall flowering shrubs, or to thatch their tops with fern, or other light covering;

covering; in order to prevent the blossoms from being killed by the frost, during the months of February and March. When the fruit is *set*, and the leaves are sufficiently long to cover it, such shelter ought, if the weather be warm, to be removed toward the end of April, or early in May; by which expedient an abundant supply of almonds may be obtained for the dessert, both in autumn and in the winter.

The fruit of the almond-tree is chiefly valued on account of its kernels: it may be preserved either in dry brán, or in sand; but it ought previously to be dried on shelves or boards in an open situation; as it is otherwise apt to become mouldy, and consequently the kernels will be unfit for use.

ALOE.—According to M. FABRONI (*Annales de Chimie*, vol. 25), the leaves of the Socotrine Aloe afford a beautiful violet colour, which resists the action of oxygen, acids, and alkalis. He directs the juice to be extracted from the fresh leaves, and then exposed to the air: thus, the liquid will become gradually red, and at length be converted into a deep violet purple, which is peculiarly calculated for dyeing silk, a stuff that readily imbibes the colour without the aid of mordants.—M. F. observes, that such juice may also be inspissated; in which state it forms a beautiful transparent colour, for painting in miniature.

ALUM.—Beside the methods of detecting alum in bread, already stated, there is a chemical process, that consists in combining a little chalk with a small portion of aquafortis, and pouring the mixture on water, in which the suspected bread has been immersed for some time.

If there be any aluminous acid, its presence will become evident, by a gypseous or chalky mass deposited at the bottom of the vessel: in the contrary case, no sediment will be formed.

In October, 1794, a patent was granted to the Earl of DUNDONALD, for his method of preparing alum, vitriol of argil, and other saline substances. He directs aluminous, vitriolic, or *pyrituous schist*, to be mixed with sea-water, or with solutions of sea-salt, kelp, sandiver, soap-boilers ashes, or any saline matter, containing muriat of soda. The liquor, resulting from such mixture, is then boiled till it be sufficiently concentrated for crystallization; after which it is mixed with a due proportion of alumschist, clay, or other argillaceous ingredient. The materials are next dried, pulverized, and submitted to the action of heat, till the muriatic acid be expelled: the result of these various processes, is *alum*. The substance remaining may, by repeated washing and drying, be used as a pigment; and, by collecting the muriatic acid in proper vessels, and combining it with volatile alkali, Lord D. procures *sal ammoniac*.—A more diffuse account of his inventions, is inserted in the 4th volume of the "*Repertory of Arts*," &c.

AMBER.—A method of making *artificial amber* has lately been discovered by Prof. HERMSTADT, of Berlin. He placed rectified petroleum, about one line in thickness, on water, in a china saucer, which was exposed to the rays of the sun, for several months, beneath a glass-bell, containing oxygen. At length, the petroleum had absorbed the oxygen, and sunk a little beneath the surface: the glass

was removed; when, after pouring off the water, and evaporating by a gentle heat, that part of the petroleum which retained its fluidity, the condensed residuum was found to possess all the properties of *amber*. Such mode of preparing that valuable bitumen, however, would be too tedious to be generally adopted; but Prof. H. from this ingenious experiment, justly infers, that amber originates from petroleum, oxygenated and inspissated by its contact with the atmosphere, under the action of the sun.

ANCHOVY. or *Clupea encrasicolus*, L. a small fish of the herring-kind, taken in immense quantities on the coast of the Mediterranean Sea, whence they are imported into Britain, in a pickled state. They are in general from 3 to 4 inches in length, have a pointed head, a wide mouth destitute of teeth, and the gums are uncommonly rough.—According to COLLINS, these diminutive fish are, likewise, found in abundance, on the Western Coasts of England and Wales.

The fishing for anchovies is principally carried on during the night; when, a light being affixed to the stern of a small vessel, the anchovies are thus attracted, and caught in nets. It is, however, asserted that they are neither so good, firm, nor so proper for pickling, as those taken without this stratagem. After having secured these delicate fish, their heads are cut off; the intestines extracted; and the bodies salted, and deposited in barrels.

In the choice of anchovies, such as are small, round-backed, fresh pickled, white on the outside, and red within, deserve to be preferred; because those of a flat, or large

form, are frequently a spurious sort, called *sardinias*. Independently of these qualities, the pickle should possess a fine taste and flavour.

Anchovies are variously prepared: after *boning* them, and taking off the tails and fins, they may either be eaten with oil and vinegar; or, by mincing them with pepper, &c. be formed into sauce for other fish. They are likewise packed in small earthen vessels, closely covered, so as to exclude the air: by this simple precaution, their flavour may, for a long time, be preserved. But the most effectual method of keeping these fish in a concentrated state, is that of reducing the fleshy part to a soft pulp, of the consistence of butter; and, after adding pepper or other spices, the *extract of anchovies* thus prepared, should be put in gallipots, first covered with a round piece of fine writing-paper, or hog's bladder; and then melted beef suet in a lukewarm state, must be poured over the whole, so as to leave about half an inch space between this air-tight covering and the top of the vessel, which is again secured with strong paper.

ANOTTA, is an elegant red colouring substance, prepared from the pellicles, or pulp, which surround the seeds of the Arnotto Tree, or *Bixa*, L. a native of South America.

According to LABAT, the Indians prepare an anotta far superior to that imported into Britain: it is of a bright, glossy, red colour, little inferior to CARMINE. For this purpose, instead of steeping and fermenting the seeds in water, they rub them with the hands, previously immersed in oil, till the pellicles are separated, and reduced to a clear paste; which is then scraped

scraped off with a knife, and exposed on a clean leaf in the shade, where it is gradually dried.

Anotta pays, on importation, a duty of 1½d. per lb.—It is chiefly used for imparting to wool or silk a deep, though not permanent, orange hue. Considerable quantities of this dyeing drug are likewise employed in the colouring of CHEESE; and also as an ingredient in varnishes, for communicating an orange shade to the simple yellows.

From the wax or pulp, in which the seeds of the arnotto-tree are inclosed, the Indians and Spaniards prepare a cool, agreeably rich cordial, which they mix with their chocolate, for improving its flavour, and heightening its colour. The roots possess nearly similar properties, but operate more powerfully by the urinary passages:—they are employed by the natives in broths, and answer all the purposes of the pulp, though in a weaker degree.

ANT.—A new method of exterminating these insects, is recommended by Mr. FORSYTH; with a view to prevent them from traversing walls, and injuring fruit. He directs a hole to be drilled in the ground, with a sharp-pointed wooden stake, or with an iron crow, close to the side of the wall, and at such depth as the soil will permit. In consequence of the earth being stirred, the insects will be induced to move about: the sides of the hole are then to be made smooth, so that the ants, on approaching the edge of the orifice, may fall in, and be unable to climb upwards. When a considerable number is collected at the bottom of the cavity, Mr. FORSYTH directs water to be poured

on them; and thus thousands may be drowned. Similar holes must be prepared for their reception, according to the length of the wall; and the royal gardener remarks, that great numbers may likewise be killed, by strewing a mixture of quicklime and soot, along such places as are much frequented by ants: they may farther be banished from trees, by scattering a little pulverized STAVES-ACRE on the ground, around their stems; but, where it is practicable, to open the nests of these insects, he directs a piece of quick-lime to be thrown in, and over it, a sufficient quantity of water for slacking it; when the heat, together with the suffocative air thus evolved, will certainly destroy them. The burning effect of the lime will be still greater, by substituting a mixture of soap-suds and urine for water.

ANTIMONY.—An improvement in the preparation of the antimonial powder, which is substituted in regular pharmacy, for Dr. JAMES'S FEVER-POWDERS, has lately been proposed to the Royal Society, by Mr. CHENEVIX. He directs equal parts of phosphat of lime, and pulverized algaroth, to be dissolved in the smallest possible quantity of muriatic acid: some caustic ammonia must then be mixed with distilled water, and the muriatic solution dropped gradually into the mixture: the result of such combination will be a copious white precipitate; which, by washing and drying it, is rendered fit for use.—This medicine, Mr. C. remarks, has already been administered by some eminent practitioners; and, according to his account, it possesses the valuable properties of the antimonial powder, though in a less concentrated form;

so that the former may be exhibited in doses of less than eight grains, without exciting vomiting.

ANTISPASMODICS are those medicines, which are calculated to relieve persons afflicted with cramps, spasms, or convulsions: such are opium, Peruvian balsam, and the essential oils of different vegetables. The most speedy antispasmodic, with respect to its immediate effects, is doubtless the juice of the poppy; but the Peruvian balsam produces more permanent benefit, and has frequently been of eminent service, after opium had failed to afford any relief.

Essential oils act principally on some particular part, rather than on the system in general; and are seldom attended with any soporific effects. But, beside these internal medicines, there are some which instantly remove spasmodic contractions by contact; for instance, cream, oil of almonds, and asses'-milk; while sulphur, sal ammoniac, nitre, &c. mitigate these painful complaints, by diminishing heat. Where, however, spasms originate from inanition, and a defect of vital heat, the best antispasmodics are, valerian, musk, and castor; because these medicines tend to restore the animal spirits, and at the same time operate as corroborants.

ARCHITECTURE.—To the list of publications on this subject, already enumerated, we may add Mr. TAYLOR's Collection of "*Essays on Gothic Architecture*," (8vo. pp. 149, 1800); which are written by the most able adepts in this branch of science, and are illustrated with elegant engravings.

ARITHMETIC.—Beside the elementary works formerly stated,

the following will be found peculiarly serviceable, both to masters and pupils, namely, Mr. CHARLES VYSE's "*Tutor's Guide*," 12mo.; —his "*Key to the Tutor's Guide*," 12mo.—Mr. EWING's "*Institutes of Arithmetic*,"—Mr. MOLINEUX's "*Question Book, or Practical Introduction to Arithmetic*," 12mo.: —his "*Scholars' Question Book*," also in 12mo.;—Mr. BONNYCASTLE's "*Introduction to Arithmetic*," 8vo.; — and, lastly, Mr. KEITH's "*Complete Practical Arithmetician*," &c. 12mo. 2d edit.

ART.—Those of our readers, who wish to trace the rise and progress of the arts of architecture, sculpture, and painting, in this country, will meet with ample information, illustrated with appropriate rules, in Mr. DALLAWAY's "*Anecdotes of the Arts in England*," &c. 8vo. pp. 526, 1800; a work which forms an useful and amusing introduction to the study of the arts.

ASPARAGUS.—In the 13th vol. of the "*Repertory of Arts*," &c. a new method of rendering asparagus more productive, is communicated by Mr. RICHARD WESTON; who observes, that the male plants yield a greater number of shoots than the female ones; though the former are of an inferior size. He consequently advises *males only* to be selected for the formation of beds; and, to prevent mistakes, they should not be planted from the seed-bed, till they have flowered. After having grown 12 months, Mr. W. directs them to be removed into beds, at the distance of six inches from each other, where they ought to remain another year, in which they generally flower; a small stick must then be driven into the ground, contiguous

to

to each of the male plants, in order to separate them from the females, the latter of which are then to be pulled up.

Towards the end of July, especially if the weather be wet, the stalks of the asparagus should be cut down, the beds be *forked up*, and raked smooth. In case the season be dry, Mr. Westrow irrigates the beds with the drainings of a dung-hill; leaving them somewhat hollow in the centre, for the better retention of the water or rain. In the course of 12 or 14 days, the asparagus begins to appear; and, if the weather be very dry, the watering ought to be repeated once, or twice, every week. —By such method, he observes, a constant supply of this vegetable may be obtained, till the month of September, when hot-beds will become necessary; so that, by making five or six of the latter, during the winter, a regular succession may be procured, throughout the year.

ASS.—This useful animal is chiefly employed for drawing hucksters' carts, and similar burthens; but it appears from an experiment, made by the Earl of EGREMONT, and recorded in the 37th vol. of "*Annals of Agriculture*," that asses may be advantageously put in harness, for the draught of waggons. His Lordship, early in the

year 1800, formed a team, consisting of six of these male animals; and during the term of nine months, he found them of great service. The creatures brought one chaldron and a quarter of coals twice a day, in a waggon, from the canal to his house at Petworth: they were gentle, and docile; during the winter they had no oats, subsisting wholly on furze, holly, and the bands of the trusses of hay consumed by horses. As, therefore, asses are very hardy, and may be kept at a trifling expence, we recommend this experiment to the attention of our country readers, and readily subscribe to the opinion of Mr. Young, that "they will be found by far the cheapest team that can be used."

ASTRONOMY.—In addition to the later elementary books already mentioned in this article, we recommend the two following, as being well calculated to give youth an idea of the planetary bodies, and their revolutions, namely, Mr. FERGUSON's "*Young Gentleman's and Lady's Astronomy familiarly explained*," in 10 Dialogues, 8vo. 1768; and Mr. BONNYCASTLE's "*Introduction to Astronomy*," 8vo. 1786: this work is written in a series of Letters, in which the most interesting parts of the science of Astronomy are unfolded, and illustrated with engravings.

B.

BARK.—Dr. DARWIN considers the bark of the trunks of trees to be similar to that of their roots,

of which he conceives it to constitute a part; inasmuch as it consists of an intertexture of the vessels, that

that descend from the plume of each individual bud to its radicle, and form its CAUDEX. The root-bark, however, is provided with lymphatics, for the absorption of water and nutritious juices from the earth, and is covered with a moister cuticle; while that of the stem has similar vessels for absorbing humidity from the air, and is furnished with a drier cuticle.

Beside the purposes to which the bark of trees may be applied, and which have already been enumerated, there is a considerable quantity of mucilaginous or nutritious matter contained in the inner rind, or bark of the holly, elm, and also (according to Dr. D.'s conjecture), in that of the hawthorn, gooseberry, furze, or other trees armed with prickles, for preventing the depredations of animals. This mucilage, he conceives, may be used in times of scarcity, as food, either for man or for cattle, or at least for the purpose of fermentation. He remarks, that the inner bark of elm-trees, when stripped off in the spring, and boiled in water, may doubtless be converted into a *palatable small-beer*, with the addition of yeast.

The quantity of bark on a tree may be increased by pinching off the flower-buds, as soon as they appear; but, if the former be wounded by any accident, the edges of the dead rind ought to be carefully cut off, without injuring the living bark; and a mixture of white lead and boiled oil (see vol. i. p. 432) be applied, to preserve the wounded parts from air, moisture, and insects.—The following method of cure, which is stated to have been successfully practised where the bark of a tree had recently been torn off, we give on

the authority of Dr. DARWIN. It consists simply in again fastening the same piece of bark, or in tying down another piece from a tree, belonging to the same species; the edges of the wound and bark being carefully adjusted; in consequence of which, the whole will combine in the same manner as the vessels of a scyon unite with those of the bark belonging to the engrafted stock.

A patent was lately granted to Mr. WHITBY, for his improved mill, calculated to grind bark for the use of tanners. It is performed by a number of cutting wheels, that are fixed upon axles, and chop the bark to pieces; which then fall through an eye, and pass between two large cast-iron plates, with grooves or furrows that are cut either hollow, or are bevelled square. The lower plate is made to move in a circular direction, with a view to facilitate the entrance of the bark into the eye.—These plates are set in motion by the mechanism commonly employed in mills.

This machinery, when moved by a horse, grinds 3 cwt. of bark, in one hour; but as the plates which constitute the chief invention in this mill, may be made of any circumference, according to the power by which they are impelled, the quantity ground in a certain time, will vary in proportion to their size.—The advantages stated to be derived from Mr. WHITBY's contrivance are, a saving of the bark, and greater expedition in the process of tanning; for the rind thus reduced, without being pulverized, *spends* more rapidly and completely in the pits, than that prepared in mills of the common construction.

Patents

Patents were also granted, in February, 1801, to Mr. JAMES WELDON, in consequence of his improvements on a bark-mill, for which he obtained a privilege in 1798;—and, in May, 1801, to Mr. THOMAS BAGNALL, for a mill designed to chop, grind, riddle, and pound bark, &c. The inquisitive reader will consult the 15th volume of the "*Repertory of Arts*," &c. where specifications are inserted, and illustrated with engravings.

BASE-ROCKET, ROCKET YELLOW-WEED, or WILD MIGNONETTE, *Reseda lutea*, L. is an indigenous plant, growing in meadows, pastures, and corn-fields, chiefly in a calcareous soil; though it is sometimes found on walls; where its pale-yellow flowers appear from July to August.—This neglected vegetable may be eaten in the same manner as KALE; and it was formerly reputed to possess anodyne properties.

BATH (*Earth*), is a modern contrivance, which was introduced into this country by a late notorious empiric: it consists of a cavity dug in the ground, into which patients descend as far as the chin, while the interstices are expeditiously filled up with fresh mould, so that the soil may come in contact with every part of the body.

Earth-Baths are often employed by the Spaniards, in cases of hectic fever, and pulmonary consumption: a few years since, they became fashionable in London, as well as at Bath; but, having often been misapplied by fanciful and ignorant persons, they were soon relinquished, and have now fallen into disrepute.—Such baths, however, have occasionally proved very efficacious in the sea-scurvy; and, if judiciously managed, under me-

dical superintendence, they may be of essential service in cases of incipient phthisis.

BEAM, in architecture, is the largest piece of timber employed in the erection of edifices: it is laid across walls, and serves to support the principal rafters, which are framed into it.

The proportions of beams vary according to their length; and to prevent accidents that might happen from their breaking, through frauds in building houses, they must be fixed, in the metropolis and its vicinity, *by statute*, in the following manner:—A beam 15 feet in length ought to be 7 inches on one side of its square, and 5 on the other; if it be 10 feet long, one side must be 8 inches, and the other 6; increasing progressively according to its length. In the country, however, beams are in general made comparatively stronger, especially in places where timber can be purchased at a more reasonable price.

BEE.—For treating the stings of these insects, we are informed by an obliging correspondent, that "common salt is a certain and almost instantaneous cure." If the sting be *internal*, the salt must be swallowed: in the contrary case, the skin should be previously moistened, in order that it may more easily absorb the saline matter.

BEET.—An important discovery has lately been announced by Prof. SCHERRER, of Vienna, and which promises to be of great service in domestic economy, especially when barley is scarce. He found from experiments, that beet-roots afford an excellent substitute for MALT, if they be deprived of the greater part of their juice by pressure, then dried,

dried, and treated in the same manner as grain intended to be used for that purpose. The beer thus brewed was found to be perfectly wholesome and palatable; being little inferior to that prepared from malt. Besides, the juice obtained from these excellent roots, may be advantageously converted into **SUGAR**. See p. 161, of the present volume.

BILL, in commerce (vol. i. p. 257).—Under this article, we have omitted to state, that, if the sum amount to forty shillings, and do not exceed 5l. 5s. a stamp-duty of 4d. only is required for such bills, or notes of hand.

BIRCH-TREE (vol. i. p. 260).—**LEONARDI** remarks, in the 2d volume of his "*Natural History*," p. 629, Germ. edit. that the flower catkins of this tree, when boiled in water, afford a good substitute for **SOAP**.

Beside the utility of the sap or juice of the birch-tree, in affording a delicious *wine*, it appears from the experiments of **HERRNSTADT**, that *sugar* may be obtained by inspissating the juice of the variety, called **Black Birch**. Such sugar, however, is not only of an inferior quality, but less in quantity, than that prepared from the **Sugar-MAPLE**.

BIRD.—Although some kinds of the feathered tribe are of eminent service to agriculturists and gardeners, by devouring innumerable insects, yet as great injury is committed, especially by *crows*, we shall here briefly state a few expedients that have been lately recommended.—In some parts of England, farmers employ children to drive away such depredators by shouting: in others, the firing of serpents from guns, among flocks of crows, has likewise been found

very efficacious; but the most simple and least expensive contrivances, are rattles, similar to those employed by the watchmen of the metropolis, which may be set in motion by children:—their terrific noise will effectually disperse predatory birds of every description.

BITTERN, or *Ardea stellaris*, L. a solitary British bird, inhabiting chiefly the fen-countries: it has a smooth head, and the plumage, in general, is of a pale-yellow, spotted and barred with black.—This bird may be distinguished from the whole feathered tribe, by the dismal hollow note it utters, while skulking among the reeds and sedge; which noise may be heard at the distance of a mile.

Bitterns construct their nests with the leaves of water-plants, on some dry place among reeds; where the female deposits five or six eggs of a cinereous green colour.—Though in many respects resembling the **HERON**, bitterns are neither so destructive nor so voracious; being, in general, satisfied with frogs, insects, and vegetables. When wounded, and unable to escape, they still contend with the sportsman, and frequently strike at his eyes, in the attempt to secure them.

Formerly, the bittern was held in great esteem at the tables of the opulent, and was sold at a high price: it is still, by epicures, considered a delicacy; its flesh partaking of the flavour of a hare, without having the rank taste of the heron.

BLEACHING.—In January, 1798, a patent was granted to **Mr. CHARLES TENNANT**, for his method of using calcareous earths, especially those known under the names of **Barytes**, and **Strontites**,

as substitutes for alkalis, in neutralizing the muriatic acid gas employed in bleaching, &c. The patentee directs such calcareous earths to be calcined, pulverized, and sifted; after which a certain portion of quick-lime, according to the degree of strength required, must be thrown into the vessel usually employed in the preparation of the bleaching liquor, for the purpose of retaining the oxygenated muriatic gas. When the ingredients generally employed, namely, manganese and spirit of salt, have been introduced into the retort, and the gas begins to rise, the liquor contained in the receiver ought to be constantly agitated, so that the fine particles of the lime may be diffused throughout the whole of such fluid; for the success of the process depends chiefly on this circumstance. As soon as the manganese, or other material, ceases to yield the oxygenated muriatic acid gas, the whole should be suffered to remain at rest, for two or three hours; after which the clear liquor must be decanted for use. Mr. T. farther observes, that if these calcareous earths be *mechanically* suspended in water, or other aqueous fluid, they will unite with such acid gas, and form a compound that may be advantageously employed in bleaching.

The liquor, thus prepared, is not only a considerable saving in the article of ashes, but also the time usually required for bleaching is remarkably shortened.—A more diffuse account of this invention is given in the 9th vol. of the "*Repository of Arts*," &c.

BLEAK, or *Cyprinus alburnus*, L. a well-known scaly fish, inhabiting British streams, and being from 5 to 6 inches in length.

Bleaks associate in large shoals: at certain seasons, they tumble about near the surface of the water, are incapable of swimming with any rapidity, and appear to be in great agony: they, however, speedily recover, and disappear.—Fish, thus affected, are denominated *mad* bleaks. They are likewise troubled with a species of *gordius*, or hair-worm, which often proves fatal among them.

The Bleak is reputed to be a delicate fish, though it is chiefly valued on account of its scales; which, by treating them in the manner already stated, vol. iii. p. 357, may be manufactured into *Artificial PEARLS*.

BLIGHT.—This being one of the most destructive distempers to fruit-trees, we shall give an account of the different remedies that have been proposed by Mr. FORSYTH, both for its prevention and cure, according to the various causes from which it may originate.

Where the blight arises from long-continued easterly winds, the diseased tree ought to be washed with a mixture of urine and soap-suds: this operation must be performed as early as possible; for the malady may thus be in a great measure prevented; but, if the young and tender shoots be greatly infected, it will be advisable to cleanse them with a woollen cloth, dipped in the following liquor: Take 1 lb. of tobacco, 2 lbs. of sulphur, 1 peck of unslacked lime, and about 1 lb. of elder-buds; let 10 gallons of boiling water be poured on these ingredients into a hog-head, which must now be closely covered, and the whole be suffered to become cool. The vessel is then to be filled up with cold water; and,

and, after standing two or three days, during which time the liquor must be skimmed, the mixture will be fit for use.

Another cause of blight in the spring, is the sharp hoar frost, which often takes place during the night, and is succeeded by hot days; so that the blossoms and fruit inevitably perish. The only preventive of such accidents, hitherto known, is the covering of walls with old fish-nets, doubled three times; and, if a few branches of dry fern be placed between the boughs, they will greatly contribute to break the force of high winds, as well as of the frost. Such shelter ought to be employed only during the night, and be removed in the day time. Thus, the fruit will be effectually preserved; and, as the apparent trouble attending this practice might deter many persons from adopting it, Mr. F. is of opinion, that the object may be easily and expeditiously attained, by contriving to draw up and let down the nets by means of pulleys.

Frequently, however, the affection termed *blight*, is merely a weakness in the trees, which depends on the difference of their constitutions, and proceeds from want of proper nourishment; some bad quality in the soil; or from a distemper in the stock, buds, or scyons; all of which causes produce a malady in trees, that is with difficulty cured.

Should the cause arise from the soil, Mr. F. directs it to be dug out, and supplied with fresh mould; or, it will be advisable to remove the trees, and to plant others, which are better adapted to the ground; because it is indispensably necessary to suit different kinds

of fruit-trees, as nearly as possible, to the nature of the land. But, where the weakness of trees is induced by some inbred disease, they ought to be dug up; the earth be changed; and other plants be substituted.

Lastly, there is another species of blight, that is very destructive to orchards and plantations, in the months of April and May: it is known under the name of *BLAST*. This malady is conjectured to originate from certain transparent floating vapours, which assume such forms as to converge the rays of the sun, in a manner similar to a burning glass, and to scorch those plants on which they happen to descend, in a greater or less degree, according to their convergency. The blast occurs most frequently in close plantations, where the exhalation of vapours from the earth, and the perspiration of the trees are confined, for want of a sufficient circulation of the air to disperse them. Mr. FORSYTH, therefore, recommends a clear, healthy spot, to be selected for kitchen-gardens, orchards, &c.; the trees being planted at such a distance as to give free admission to the air; so that all noxious vapours may be dissipated, before they are formed into volumes capable of occasioning blasts.

BLUE.—A fine colour has lately been discovered by Mr. THOMAS WILLIS, which promises to be useful in the art of painting. It is prepared by mixing a solution of alum and martial vitriol with the mother water, which remains after extracting the crystals of phosphated soda, from a combination of the phosphoric acid with pure mineral alkali.—Our limits not permitting us to relate his various experi-

periments, the curious reader will consult Mr. W.'s "Account of, and observations on, different blue colours produced from the mother-water of soda phosphorata," &c. which is inserted in the 4th vol. of the "*Memoirs of the Literary and Philosophical Society of Manchester*."

BOOKS are liable to be stained with grease, tallow, oil, or other fat substances; by which their beauty and value are greatly impaired: hence we shall add the following recipe for restoring them to their former colour, on the authority of M. DESCHAMPS. He directs ("*Bibliothèque Economique*," vol. i.) the soiled paper first to be warmed, and as much of the grease as is possible, to be taken out, by means of blotting-paper. A small brush is then to be dipped in the essential oil of well-rectified spirit of turpentine, previously heated till it nearly boil, and to be drawn over both sides of the paper, which ought to be kept warm. This operation is to be repeated, till all the grease be extracted; when another brush, immersed in highly-rectified spirit of wine, must be passed over the same paper; by which expedients, the spots will completely disappear; the paper will resume its original whiteness; and, though the process be employed on a part containing written or printed characters, they will experience no alteration.

BRASS.—In 1791, a patent was granted to Mr. JAMES EMERSON, for his invention of making brass of copper and zinc.—The patentee directs the spelter to be melted in an iron boiler, then passed through a perforated ladle, and placed over a vessel containing water; by which means the zinc will be gra-

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nulated. Fifty-four pounds of copper shot are now mixed with 10 lbs. of calcined and pulverized calamine, together with about one bushel of charcoal: a handful of this mixture is first put into a casting-pot, then 3 lbs. of the granulated zinc; upon which the composition before specified is laid till the vessel be filled: Mr. E., however, has not stated the exact proportion of the ingredients.—Eight similar pots are now to be supplied with the same materials, and the whole must be submitted to the heat of a furnace, for the space of 12 hours; when the process will be completed, and 82 lbs. of brass be procured; which the patentee asserts to be of a very superior quality to that manufactured from copper and calamine.

BREAD.—Beside the shameful adulterations practised with this important article, by employing chalk, alum, &c. which have already been stated, there is great reason to apprehend that considerable quantities of the meal of pease and beans are mixed with the flour usually sold to bakers. It is well known, that meal-men purchase various kinds of grain; and, as many of the former are often indebted to the latter in considerable sums, they are either rendered unable to purchase the best flour; or, frequently, by dire necessity, induced to take such a mixture as the meal-men please to allow them.—Why therefore, should the quality of the bread be less worthy the attention of public officers, or of that respectable body of citizens, called the *annoyance-jury*, than the mere weight or quantity?

French Bread is prepared in the following manner: Take half a bushel of the best wheaten flour, and dilute one pint of good yeast

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with three quarts of warm water; mix the whole properly, and cover it with flannel, till the sponge be formed. After the dough has sufficiently risen, six quarts of lukewarm skimmed-milk, and 1 lb. of salt, are to be worked in, with the fingers, till the sponge be weak and rosy; when it must again be covered, and kept warm. The oven being now made very hot, and the paste moulded into bricks, or rolls, they are put in expeditiously; the former requiring one hour and a half; but the latter only half an hour. As soon as the bread is baked, it must be drawn; and, if burnt, the black crust should be rasped.—When the milk is added to the sponge, two ounces of butter are sometimes incorporated; but this addition being immaterial, it may be omitted.

BRICKS.—An important discovery has lately been made by Mr. WHITMORE DAVIS, at Castle Comber, in the county of Kilkenny, Ireland. He observed some persons in the vicinity of a colliery, to employ a mortar for the backs of their grates, which in a short time became hard. This substance he found, on examination, to be what miners term *seat-coal*, or that fossil which lies between coal and the rock. It has been submitted to the investigation of Mr. KIRWAN, who is of opinion, that it will, when mixed in due proportions with clay, produce a kind of bricks, capable of resisting the action of fire, and consequently well calculated for furnaces, or similar structures. Mr. DAVIS has accordingly employed it with success; and he farther observes, that seat-coal, if properly prepared, will answer every purpose of terra, for buildings beneath water.

BRUISES, if neglected, even in temperate climates, are often attended with painful effects; but they frequently prove fatal in hot countries.—With a view to prevent inflammation, Dr. DAWSON advises speedily to apply embrocations, consisting of opodeldoc; of camphor and strong rum; or of both the last-mentioned articles with a little soap; to which a small quantity of laudanum may be added. Should the inflammatory symptoms increase, he directs the following saturnine solution to be employed:—Let one or two tea-spoonfuls of Goulard's extract, or from one to two drams of sugar of lead, be combined with 8 oz. of water, 4 oz. of vinegar, and two tea-spoonfuls of laudanum. Lastly, to remove the debility which usually remains after contusions, or sprains of the joints, he recommends the affusion of cold water, or stimulating frictions, and electricity.

BUR-WEED, the GREATER, or BUR-REEB, *Sparganium erectum*, L. is an indigenous perennial, growing in ditches, rivulets, and on the banks of rivers, where it flowers in July.—This plant, though refused by sheep and horses, is eagerly eaten by cattle, while in a green state; but, when dry, it produces a hard fodder.—Its flowers, while in full bloom, have by BRUTSCH been successfully employed in tanning.

BUTTER.—The following method of preparing butter is advantageously practised in Holland. When the cows are milked, the milk is not poured into pans, till it become perfectly cold: it is then stirred two or three times in the day, so that the cream and milk may more intimately combine; and,

if it be agitated till a spoon will nearly stand upright, the butter thus obtained is held in great esteem. As soon as the milk acquires a proper consistence, it is poured into a churn; worked for an hour; and, when the butter begins to form, one or two pints of cold water are added, in proportion to the capacity of the vessel; with a view to separate the former with greater facility.

After the butter is taken out of the churn, it is repeatedly washed and kneaded in pure water, till the last effusion be clear and free from milk. In this simple manner, a larger portion of butter is gained from an equal quantity of milk; and which is not only more firm and sweet, but also remains fresh for a longer time than that usually made in England, while the butter-milk is more palatable.

Beside the different modes of curing butter, already described, it may be easily preserved in a sweet state, by melting it down in large vessels over a slow fire; care being taken to remove the scum that rises to the surface. This method being adopted by the Tartars, we have inserted it on the authority of Mr. KRON; who states (in his late interesting "*Survey of the Turkish Empire*," &c. 8vo.), that he has used butter, thus boiled, and then salted, as is usual in Britain; in which state it remained perfect-

ly sweet for the space of two years.

BUTTER-CUP.—Although we have not been favoured with any communications, respecting the harmless or poisonous properties of this vegetable, yet we are happy to state the following fact, for the information of our country readers: its acrimony is so volatile, that its virulence is totally dissipated by drying. When made into hay, it is perfectly harmless, nay, even nutritious to cattle. For this important discovery, we are indebted to Dr. PULTENEY ("*Transactions of the Linnean Society*," vol. v.), who extends the same observation to the Lesser SPEARWORT, the Bulbous, the Round-leaved Water, and the Common CROW-FOOT: he farther remarks, that the avidity with which sheep, cows, and horses eat the last mentioned plant, is an exception to the commonly received opinion, that animals are led by instinct to reject what is noxious.

BUTTERFLY.—The diversified insects of this denomination are justly admired for their beautiful shades of colouring; but, as their larvae or grubs, and chrysalids, do extensive injury to fruit-trees, Mr. FORSYTH directs them to be carefully collected and destroyed, after which the trees must be washed with a mixture of lime and tobacco-water.

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CALENDER.—In the year 1797, the Society for the Encouragement of Arts conferred a re-

ward of 20 guineas on Mr. EDMUND RYNDING, for his improvement of calender-mills.—The mechanism

chanism of Mr. B.'s ingenious contrivance being such as cannot be described without delineation, the inquisitive reader will consult the 15th vol. of the Society's "*Transactions*," where the whole is illustrated with an engraving. We shall, therefore, only add, that these improvements have received the sanction of able mechanics, who consider them as a valuable acquisition to calenderers; and who, from its cheapness and practicability, conceive them to be worthy of public attention.

CANDLE.—A method of making this useful article with *wooden wicks*, is practised at Munich, in Bavaria; and, as it promises to be of great utility, we lay the following account before our economical readers.

The wood generally used for this purpose, is that of the fir-tree, when one year old; though pine, willow, or other kinds are frequently employed: the young shoots must first be deprived of their bark, by scraping; which operation ought to be repeated after they become dry, till they be reduced to the size of a small straw. These rods are next to be rubbed over with tallow, or wax, so as to be covered with a thin coating of either of these substances; after which they should be rolled on a smooth table, in fine carded cotton, of the same length as the rod or candle-mould; care being taken that the cotton be of an uniform thickness around the wick, excepting at the upper extremity, where it may be made somewhat thicker. By this preparation, the wicks will acquire the size of a small quill, when they must be placed in moulds, in the usual manner; and good,

fresh tallow, that has previously been melted with a little water, be poured around them.

The candles, thus manufactured, emit nearly the same volume of light as those made of wax: they burn considerably longer than the common tallow-candles; never crackle or run; and, as they do not *flare*, are less prejudicial to the eyes of those persons who are accustomed to long-continued incubations. It ought, however, to be observed, that a pair of sharp scissors must be employed for snuffing such candles; because, in performing that operation, great precaution is required, that the wick be neither broken nor deranged.

CANKER.—The general opinion respecting the *cause* of this disease is, that it proceeds chiefly from the nature of the soil, as stated vol. ii. p. 432. Mr. FORSYTH, however, proves from experience, that it originates from the following circumstances, namely: injudicious pruning; leaving the foot-stalks of fruit on trees after it has been gathered; bruises arising from the use of ladders in collecting fruit; nailing trees against walls, with too tight trellises; wet autumns, which prevent the young wood from ripening; and are succeeded by severe frosts that kill the shoots; birds and insects devouring the buds; and, lastly, from carelessly leaving dead shoots on trees, throughout the summer.

From whatever cause the canker may arise, Mr. FORSYTH directs all the diseased parts to be cut out, and the *composition* to be applied, in the manner described p. 238 of the present volume. Should any gum be observed to exude after such excision, Mr. F. states it to
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be a certain criterion, that the canker is not completely extirpated: it will, therefore, be necessary to repeat the operation as speedily as possible; for, if those defects be suffered to remain, the whole tree will be overspread with canker and gum; so that it must speedily perish.

Apple-trees are peculiarly liable to this distemper; in consequence of which their value, together with that of their fruit, is greatly diminished. To prevent the total loss of the trees, Dr. DARWIN suggests the ingenious expedient of renovating the diseased bark, by paring its edges to the quick, and carefully adapting a piece of sound bark taken from a healthy tree of inferior value; the whole being secured with a flannel roller, or other elastic bandage.

CAOUTCHOUC.—An elastic substance resembling that imported from South America, is now prepared from the *Caoutchouc-Pine*, or *Urceola elastica*, a native of the Prince of Wales's Island, in the East Indies. On wounding the bark of this plant, a milky fluid exudes; which, on exposure to the air, separates into an elastic coagulum, and a watery liquid.—The former possesses all the properties of the common India rubber, and may now be procured from our Indian Colonies.

CARP is the most valuable of the finny tribe, for stocking ponds, on account of its speedy growth, and uncommonly rapid increase: the sale of these fish is a source of considerable profit to landed proprietors on the Continent; and, if the rearing of them were better understood and practised in the marshy parts of this country, they

would amply repay every expence and trouble thus bestowed. The most proper situations for *carp-ponds*, are those surrounded by rich pastures, or corn-fields, having soft springs on the spot, or being at least in the vicinity of pure running water: they should be exposed to the sun, and sheltered from the eastern and northerly winds.

Those persons who propose to breed carp on a large scale, ought, in the opinion of the Hon. ROGER NORTH, to be provided with three reservoirs, namely: 1. A *Spawning pond*, which should be cleared of all rapacious fish, and other animals; 2. A *nursery*, intended for the reception of the young carp, which should be removed from the spawning pond, in the month of March or April; and, 3. The *main-pond*, which is designed for such fish as exceed 12 inches in length.

The best carp for breeding, are those from 5 to 7 years old, with long bodies, fine full eyes and scales, without any blemish or wound: three or four such male fish, with six or eight females, will be sufficient to stock a pond one acre in extent; they should be conveyed thither on a fine calm day, toward the end of March, or early in April. One thousand, or twelve hundred, young fish may conveniently inhabit a *nursery* of a similar capacity; but, when they are first put in, it will be necessary to watch and drive them away from the sides, lest they become the prey of rapacious birds. The most favourable seasons for stocking main-ponds, are the spring and autumn; when a space, of 15 square feet (perhaps four cubic feet), will be sufficient for each carp: the growth

growth of the fish depends on the rock, and quantity of food allowed them.

The winter seasons sometimes prove so severe, that the water freezes as often as the ice is broken for the admission of air; in consequence of which the carp frequently perish. In such case, the fish may be preserved in a collar, by the following expedient: Let each be enveloped in wet moss laid on a piece of net, and then be secured in a purse, so as to admit the air. The net must be immersed in water, at first every third or fourth hour, and suspended to the ceiling; though afterwards, such dipping may be performed once in six or seven hours. Their food ought to consist of bread, soaked in milk, which should be given in small quantities, and gradually increased, as the animal becomes accustomed to this mode of living. By such treatment, many fish have been preserved alive for a considerable time, and have even grown fat, so as to become more fit for the table.

CARRIAGE.—In August, 1800, a patent was granted to Mr. ISAAC HADLEY REDDELL, for a new method of constructing carriages, intended to convey merchandize, either by land or by water; and which may be removed (whether loaded or unladen), from the water to the land, and *vice versa*, with ease, expedition, and safety. The patentee makes the bodies of any size or shape required, principally of wood; but, to strengthen, and render the different parts water-tight, they are connected with iron, or other suitable material. A proper number of wheels are next affixed, either in recesses, or in narrow boxes or compartments, that

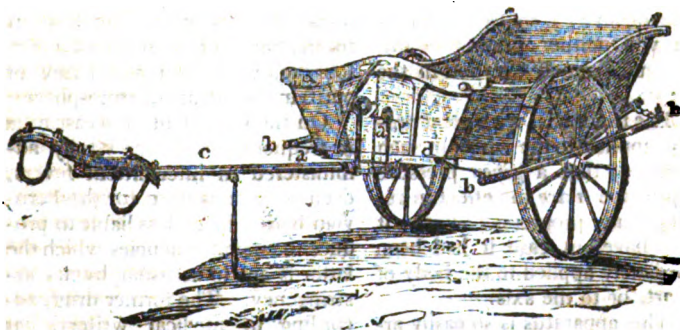
and so constructed as to resist the water: these wheels are farther so arranged, that the bottom of the carriages be not more than six, nor less than three inches, above the ground. When in the water, the carriages thus adjusted, may be fastened together, and drawn by one horse; but, in the contrary case, it becomes necessary to separate them, and draw them up an inclined plane.—A more particular description of this curious contrivance, is inserted in the 14th vol. of the "*Repertory of Arts*," &c.

In the year 1800, the Society for the Encouragement of Arts, &c. conferred a bounty of 30 guineas on Mr. GEORGE DAVIS, for his invention, calculated to prevent passengers in carriages from being injured, when horses have taken fright. As a more verbal account would not convey an adequate idea of this useful machinery, we are under the necessity of referring the reader to the 18th vol. of the "*Transactions of the Society for the Encouragement of Arts*," &c. where the whole is illustrated with an engraving.—Let it suffice to remark, that the apparatus is fixed behind the splinter-bar of a carriage; and the communication is, by means of a copper chain, carried through the boot to the side of the coach-box; so that, in case the horses take fright, or the reins break, the coachman can discharge the animals instantaneously. An advantage peculiar to this contrivance is, that the horses can be liberated even when the poles are at right angles, or are locked close to the perch; a position which otherwise turns a carriage.—Mr. DAVIS'S invention has been exhibited with complete success, in the presence of His MAJESTY, a Committee

mittee of the Society, and many other spectators; but, as apprehension was entertained that passengers might suffer injury from the motion of the carriage, after the horses were disengaged, Mr. D. has added a gripe for stopping the wheels; so that, by one pull of the chain, the animals may be discharged, and two bolts be propelled on the nave of the two fore-wheels, in such manner as effectually to retard their motion.

CART.—In the 2d volume of

"Communications to the Board of Agriculture," we meet with a description of a *Drag-Cart*, and an ingenious method of regulating the centre of gravity of the load; by Lord SOMERVILLE. This memoir is illustrated with plates, from one of which we have selected the following figure, representing a perspective view of a cart designed to be drawn by two strong oxen, with a pole, yoke, and bows; such carriage being calculated to convey 45 cwt.



In the front of the body of this cart, is represented the manner in which the centre of gravity of the load is adjusted; in order to prevent it from pressing too much on the animals, when descending a hill: the front of the cart is elevated by means of a toothed rack screwed on it, and worked by a pinion, and the handle *a*; being immediately connected with the pole *c*.—By the aid of this pinion and rack, the front of the carriage is raised in a greater or less degree, according to the declivity; so that the weight of the load bears more on the axle, and less on the necks of the cattle.

On the side of this cart is delineated the position, in which the

friction-drag is applied, and is made to press in a greater or less degree, according to the steepness of the descent.—*b, b*, is the *friction-bar*; one end being connected with the tail of the cart, by means of a small chain; and the other being fastened to the front by a toothed rack *b, d*, that catches on a staple in such front; so that the *friction-bar* may be made to act more or less powerfully on the side of the wheel, at the discretion of the driver:—the notches, or teeth, on this rack should be set as closely together, as circumstances will permit.

The *friction-bar*, in the figure above given, is stated by Lord S. to be placed lower on the wheel *D d* 4 than

than it was originally designed, with a view to divide the pressure and friction more equally on the opposite side of the wheel: so that the action on each is diminished; and the risk of over-heating and destroying the friction bars is rendered less, than if the whole pressure were applied in one point, on the top of the wheel. The advantages arising from the drag here described, are as follow:

1. The pressure and degree of friction may, with great expedition, be adjusted to the steepness of the declivity; so that the carriage will neither press forward, nor require much exertion in the draught.

2. The friction is, with great propriety, applied to the wheel in such a direction, that a *given* pressure will produce *twice* the effect in retarding the progress, which it would have, in case it had been immediately applied to the body of the cart, or to the axis.

3. This apparatus is so easily arranged, that it may be immediately adjusted, without stopping the carriage, or exposing the driver to danger.

4. Lord S.'s useful contrivance will be of still greater utility when applied to *both* the hind wheels of waggons: for, by this expedient, the resistance may not only be always adapted to the steepness of the descent, so as effectually to prevent both the tearing up high roads, and the unnecessary exertion of cattle, when drawing loaded carriages down hills; but also the frequent accidents to which drivers are exposed, will be completely obviated; and that time, which is now spent in locking and unlocking waggon-wheels, will in future be saved.

CASCARILLA, is the bark of the *Croton eleutheria*, L. a native of the East Indies, whence it is imported in the form of curled pieces, or rolled up into short quills, about an inch in width; externally resembling the Peruvian bark.

Divested of its whitish upper rind, the Cascarilla possesses an agreeable smell, and a bitterish, pungent, aromatic taste. This inflammable drug, when burning, emits a fragrant odour, not unlike that of musk; on account of which property it is often employed in fumigations, or as an ingredient in tobacco, with the fanciful view of purifying a corrupted atmosphere.

On the Continent, the cascarrilla is frequently and successfully administered in intermittent fevers, even as a substitute for the Peruvian bark; being less liable to produce the inconveniences which the latter is apt to occasion by its astringency. The former drug, according to medical writers, has also been prescribed with uncommon advantage in dangerous epidemic and *petechial* fevers, in flatulent colics, internal hemorrhages, dysenteries, diarrhoeas, and similar disorders.—The virtues of the Cascarrilla are partially extracted by water, and totally by rectified spirit; though it operates most effectually when given in powder; the doses being regulated, according to circumstances, from ten to 30 grains, every four, six, or eight hours.

CATTLE.—As the fattening of cattle is an object of great importance, we shall here add an account of two articles, that have lately been employed with considerable success. The first is *teash*, or the refuse of grains remaining after distilla-

dilation: this liquor is conveyed from the distillery in large carts, closely jointed and well covered, so as to prevent leaking. It is then discharged into vats or other vessels, and when these are about two-thirds full, a quantity of sweet hay, previously cut small, is immersed for two or three days, in order that the wash may imbibe the flavour of the hay, before it is used. In this state, the mixture is carried to the stalls, and poured into troughs, from which it is eagerly eaten by cattle. Some animals, however, shew at first an aversion to such food; in which case their hay should be frequently sprinkled with the wash; so that, by having the smell constantly before them, and seeing others eat with avidity the same preparation, it gradually becomes less nauseous, and is at length much relished.—The cows and oxen thus fed, not only repay the expence of their keeping, by fattening speedily, but yield a large quantity of rich manure, which is more valuable than that from any other food.

An equally successful method of fattening cattle in general, and oxen in particular, consists in giving from half to a whole pint of molasses, twice in the day, to every *starving* animal, that has been exhausted by continual and severe labour, for a series of years. For this purpose, a gallon of oats, or any other damaged grain, roughly ground, or the same proportion of potatoes, should be boiled in a sufficient quantity of water, to form a thick mash. It must be well stirred while on the fire, to prevent its burning, or adhering to the sides of the vessel; and, when it becomes cool, the mixture is formed into balls, each weighing

about a pound. One half of these balls, after dipping them into the molasses in the morning (the remainder in the evening), is given to the cattle, which devour them with great eagerness, and speedily grow fat, by the addition of a little hay, or any green fodder that is not too succulent. Besides, one or two spoonfuls of salt are generally dissolved in the composition; which contributes to preserve the health of the animals; and, in case ground corn cannot be procured, oil-cake, diluted with water, seasoned with a little salt, and moistened with the same quantity of molasses, may be advantageously substituted.

Those of our readers, who wish to inquire minutely into the different *diseases* affecting cattle, farther than we have been able to investigate them in the course of this work, will consult Mr. TOPHAM's "*New and compendious System on several Diseases incident to Cattle*," &c. 8vo. 1788; a work containing some valuable hints, and of which a new edition was lately published.

CAULIFLOWER.—In this article we have omitted to insert the best method of preparing that culinary vegetable; on the supposition that it was generally known. Hence we shall annex the following directions, for the benefit of inexperienced readers:—Let the cauliflowers first be par-boiled: next, they must be immersed in cold, hard water, for some time, till they be nearly wanted for the table: thus, on being boiled for a few minutes, they will become more firm and crisp than if they had been cooked in the usual manner.

CEMENT.—In July, 1800, Mr. J. B. DENIZE obtained a patent for a ce-

a cement intended to serve as a substitute for putty, &c.—He conjointly employs metallic, earthy, carbonaceous, bituminous, and mucilaginous substances, together with deaiccative oils. In preparing this compound, the hard matters are previously reduced to a fine powder, while those susceptible of a liquid form, are melted on the fire: the pulverized substances are then gradually added to the liquid, constantly agitating the whole, while under the action of heat. Thus prepared, the mass is exposed to cool and harden; in which state it is kept for use. Before, however, the cement can be applied, it must be broken into small pieces, and liquified with a portion of tallow, or other unctuous matter:—according to Mr. D. it is perhaps more capable of intimate and powerful adhesion, than any other cement hitherto contrived.—A minute specification of this patent is published in the 16th vol. of the "*Repertory of Arts*," &c.

CHAFER.—This pernicious family of insects may be effectually destroyed, while in the state of *grubs*, by encouraging the propagation of moles. For the discovery of this important fact, we are indebted to EDWARD JONES, Esq. who relates it in the 19th vol. of the "*Transactions of the Society for the Encouragement of Arts*," &c. He observes that, by protecting the race of moles, the cock-chafers have gradually decreased in his neighbourhood, so that they are now rarely seen on his estate; because the grubs afford a favourite food to those subterraneous little quadrupeds.

CHAFFINCH, or *Fringilla cælabes*, L. a small beautiful bird, abounding in Britain, and in various

parts of Europe: it is chiefly valued for the variety and melody of its song.

Chaffinches construct their nests in hedges and trees; where the female lays four or five dusky white eggs, spotted with deep purple; and produces three broods within a year.—They are hardy birds, and will subsist on various seeds, but prefer chaff, whence they derive their name. These creatures, though seldom attacked with disease, are apt to be infested with lice, unless sprinkled with wine, every fortnight or oftener.—The Essex finches are generally allowed to be the best sort, both for the continuance and diversity of their notes.

CHAPS, are flaws or cracks which appear on the skin, and are induced by various circumstances.

Chaps in the face generally proceed from the action of external cold; which, by impeding the perspiration of this part, or contracting the fibres unequally, causes them to be drawn asunder; so that a fissure succeeds, which produces very uneasy sensations; and is often attended with acute pain. In order to prevent or remove such chaps, the face ought never to be suddenly exposed to the cold air, after leaving the fire-side, or a warm room; nor should such part be washed with common soap. Previously to retiring to bed, it may be anointed with *unscented pomatum*, which should not be removed till the following morning; or honey-water may be preferably applied, and suffered to dry; care being taken to cleanse the part from dust and other impurities.

Chaps in the lips, frequently arise from the same cause as those of the face; though the former sometimes occur

occur in scrophulous habits, or are occasioned by acrid humours settling on the part affected; in consequence of which the lips are apt to swell on each side of the wounded spot. When the complaint is attributed to cold, the treatment above stated will generally effect a cure: in scrophulous cases, a course of medicine, adapted to the nature of that disease, can alone remove the external affection. But, where acrid humours are the immediate cause, it will be proper to procure medical advice.—The following salve may, in the opinion of Dr. SHAW, be advantageously applied to the lips, in either of the cases above specified:—Let 2 scruples of the bark of alkanet, and $1\frac{1}{2}$ oz. of oil of sweet almonds, be simmered together over a gentle fire; then strain the liquor; add 3 drams of white wax, 1 dram of spermaceti, and 1 scruple of the expressed oil of rose; when the whole should be formed into an ointment.

Lastly, if *chaps in the hands* originate from SCROPHULA, the treatment suggested for similar affections of the LIPS may be advantageously adopted; but, where they are occasioned either by cold, the use of hard water, or of soap containing quick-lime, the hands may be anointed with the fat of geese; or rather be managed in the manner stated vol. ii. p. 427.—Should, however, such fissures extend to a considerable depth, and be very difficult to heal, it will be proper to apply digestive ointment, and to treat them as simple wounds.

CHEESE.—Having already detailed various methods of making cheese, that prevail in different countries, we shall complete our account, by inserting the following additional directions for preparing

this important article, in domestic economy.

DAIRY CHEESE.—Take 6 quarts of luke-warm new milk, to which should be added two quarts of spring water, and one large table-spoonful of rennet: when the coagulation is completed, which generally takes place in half an hour, the curd must be broken to pieces; then suffered to settle; and, after straining the whey, it should be put into square vats. In the course of an hour, it will be requisite to turn the curd; which operation must be repeated after some hours, or at night; and continued twice every day, till the cheese be fit for the table.

HAFOD CHEESE.—Let 30 gallons of new milk, and 3 gallons of sweet cream, be mixed with the juice expressed from one peck of picked marigold flowers. An *alum-glassful* (perhaps $\frac{1}{2}$ of a pint) of sack or canary wine is then to be mixed; and a sufficient quantity of rennet contained in a bag, together with cloves and mace, should be added, in order to coagulate the milk. When the curd is formed, it must be broken very small; and, after carefully expressing the whey, it ought to be put into a cheese vat, covered with a wet cloth, and pressed by the hands. A pound of newly made butter is then to be incorporated with such a quantity of salt as may be required to season the cheese; and, after combining these ingredients with the curd, the whole must again be put into the vat, and treated in the manner above described. Now, the cheese must be submitted to the action of the press; the wet cloths be changed for dry ones, every four hours; and, after having been thus squeezed for 24 hours, it should be placed beneath a smaller weight, and pressed

pressed for one week; during which it ought to be turned every day: at the expiration of that period, it must be removed to a dry place, and shifted every other day, till it be ready for use.

Hafod Toasting Cheese, is prepared by warming new milk above the natural temperature; after which the rennet is added. As soon as the curd is come, it must be completely drained of the whey, and afterwards scalded with this liquor. The curd is now to be pressed in the cheese-mould, in order to render it as dry as its nature will admit; when it is broken into small pieces by the hand, and seasoned with a proper quantity of salt. Now it is again submitted to the press, and treated in the usual manner.—This process, though more simple than that pursued in Gloucestershire, produces a toasting cheese, little inferior to that prepared in the latter county.

CHEMISTRY.—Under this head we have to add a late publication which, we understand, possesses considerable merit; though we have not had leisure to examine its contents. Being an introductory book to this science, it is entitled "*Elements of Chemistry*," by J. Murray, 8vo. vol. i. pp. 332, and vol. ii. pp. 360. Edinburgh and London, 1801.

CHICKEN-POX, or SWINE-POCK, *Varicella*, is a disorder in itself of so little consequence, that we should not have mentioned it, if this affection were not frequently confounded with the SMALL POX.

The chicken-pox generally appears without any previous illness; though, in some cases, chilliness, cough, loss of appetite, and a slight fever, precede it, for two or three days. On the first appearance of

the eruption, the pustules are of a reddish hue; and, on the succeeding day, small vesicles are formed at the top of the former, containing a colourless, or sometimes yellowish, watery fluid. On the third day, the pocks arrive at maturity; after which they gradually die away, leaving a slight scab, which, however, does not extend to the true skin, and produces no mark. This cutaneous affection is seldom attended with serious indisposition, so that medicines are but conditionally required, and often unnecessary.—A few drops of antimonial wine may, nevertheless, be advantageously given, in order to excite a more speedy and uniform perspiration, and consequently to promote recovery.

CHOCOLATE-TREE, or CACAO-TREE, *Theobroma Cacao*, L. is a native of the West Indies, and South America, attaining the height of from 15 to 20 feet: it produces small pale-red flowers, that are succeeded by pods, containing several seeds, or nuts.

From this fruit, and not from the *Cocoa-nuts* (as we have been misled to state in the article COCOA) is prepared the favourite beverage, known under the name of CHOCOLATE. The *Cacao-nuts* are first gently parched, in an iron vessel over a fire, with a view to separate their external covering more easily: the kernel is then triturated on a smooth warm stone; a little annotta is added, and, with the aid of a small quantity of water, the whole is formed into rolls or cakes, weighing about one pound each.—For an account of the manner, in which these cakes are reduced to a liquid state, the reader will consult vol. i. p. 520.

CLARIFICATION.—The various

ribus albuminous and gelatinous matters employed for clarifying liquors, have already been stated; but, as these are not in every case sufficiently powerful to precipitate all feculent particles, the following method of purifying CYDER, deserves notice:—Let two handfuls of marle be reduced to a coarse powder, and thrown into the pressing tub: in a short time, the extraneous matters will sink to the bottom of the vessel; and the liquor may then be drawn off perfectly transparent.

COCK'S-FOOT-GRASS.—This vegetable is propagated by sowing its seed in moist pastures, and marshy situations. Although its culture is at present very limited; yet as it grows with uncommon rapidity, and withstands the severest droughts, when almost every other plant is scorched, we anxiously recommend its culture to the attention of farmers.

CORD.—In June, 1801, a patent was granted to Mr. WILLIAM CHAPMAN, for the application of certain substances designed to preserve cordage; and which, being either with difficulty soluble, or totally insoluble in water, tend to render such ropes more durable, than has hitherto been practicable. The usual method adopted for this purpose, consists in boiling tar alone; till it be inspissated to a proper consistence; but Mr. C. proposes to boil the tar in two or three different waters, till it be divested of its acid, and all the mucilaginous particles; which, by the common process, remain in the liquid preparation; and, by their speedy tendency to decomposition, frequently contribute to the decay of the ropes, at an earlier period than would naturally take place without

such practice. He therefore adds a due proportion of suet, tallow, or any fixed oil, that has been deprived of extraneous matters, by similar boiling.

CORN.—A new method of preserving this valuable grain, is the following: Let a hollow cane or tube, about 3 feet 9 inches in length, be provided; tapering gradually to a point downwards, in order that it may be more easily thrust to the bottom of the sack. About 150 holes, one-eighth of an inch in diameter, must be made on each side of such hollow cylinder, to the height of about 2 feet 10 inches from the bottom; and, in order to regulate the perforation, it will be advisable to wind a pack-thread round the stick, in a spiral form; so that the holes may be about half an inch apart at the bottom, and be gradually at greater distances as they approach the top; being then one inch above each other; by which expedient a due proportion of air will be conveyed to the lower part of the corn. To the upper extremity of the cane, there should be fixed a leather pipe, 10 inches in length, and distended by means of two yards of spiral wire coiled up in it: to the upper end of such tube, a wooden fauset is to be fitted, for introducing into it the nozzle of a pair of bellows, in order to ventilate the whole sack.

If grain, when first deposited, be thus aired every second or third day, for 10 or 15 minutes, all moisture will in a short time be dissipated, and the corn will afterwards remain dry and sweet in the sacks, with very little additional trouble.—This simple practice may be advantageously adopted for the preservation of every kind of seeds and grain, excepting barley; which,

it

if once separated from the ears, can by no means be prevented from fermenting.

Another method, lately discovered for the preservation of corn, is that of *steaming*: this valuable fact was communicated by J. L. BAWEN, Esq. of Madcira, to Mr. MINDARTON, who has inserted extracts in his "*View of the Agriculture of Middlesex*."—Our limits not permitting us to detail his various experiments, we shall only state, that he steamed grain, which was much infested with the weevil, in January, and again in June. Three months after, it was in perfect preservation, being free from the depredations of that insect: and such mode of preserving grain is strongly recommended by this circumstance, that it not only yields, when ground, a larger proportion of flour; but it also retains its vegetative principle, and may be advantageously sown. Farther, as some able agriculturists attribute the *smut* to an insect which infests corn, Mr. BAWEN conjectures that such distemper may be effectually prevented by steaming.

Different expedients have already been mentioned (vol. ii. p. 68), for securing granaries from the depredations of the *Corn-Butterfly*, or *WEEVIL*:—the following methods, however, are said to be practised with great success on the Continent; and we have been induced to subjoin them, in order to furnish our readers with the most satisfactory information we have been able to procure on the subject.—Immerse pieces of hempen cloth in water; and, after expressing the fluid, spread them on the infested heaps of grain: in the course of two hours, the weevils will be found adhering to the cloths, from which they must

be carefully collected, to prevent the insects from escaping, and then immersed under water, in order to drown them. These vermin may also be expelled, by laying a branch of *fish-sauce* in the middle of a heap of grain: in such case, it will be necessary to watch them, so that they may be caught in the attempt of effecting their escape.

The last method of extirpating the *Corn-butterfly*, within the circle of our information, is that of distributing a number of large ant-hills throughout granaries and barns, in the month of June, when these magazines have been emptied of grain. The ants immediately attack and devour all the weevils: this expedient was suggested in a Paris paper; stating, at the same time, that no vermin of the latter description had appeared on the premises of a farmer, who had availed himself of these industrious insects.

CORN-FLAG, the *Common*, or *Gladishus communis*, L. a hardy, indigenous plant, growing in corn-fields, from one to two feet high; producing red and white, or purple flowers, in May and June, which are succeeded by abundance of roundish seeds, in August.

The *Common Corn-flag* may be easily propagated by off-sets from the roots; as it prospers well in any soil or situation.—The small, round, tuberosous root is internally yellow, and reputed to be an excellent vulnerary; but this neglected vegetable is more important on account of its medicinal nature. PLINUS probably alludes to it, in the XXXIst Book of his *Natural History*, where he observes, that the root has a sweet taste; and, when boiled, not only imparts to *BREAD* an agreeable flavour, but increases its weight.

weight.—The blossoms of this plant supply bees with honey.

COTTON.—In July, 1801, a patent was granted to Mr. ANTHONY BOWDEN, for a new machine or engine designed to *bat*, or beat, and clean cotton. A mere description being inadequate to convey a distinct idea of Mr. B.'s contrivance, the inquisitive reader will consult the 16th vol. of the "*Repository of Arts*," &c. where his specification is illustrated by an engraving.—At present, we shall only remark, that the principle of this invention corresponds with that on which the other improved machinery of cotton-works is constructed: its chief merit consists in giving a new distribution of mechanical power, calculated to perform an operation, in preparing cotton for the manufacturer, which has hitherto been executed solely by human labour; and, as *two-thirds* of the number of labourers, consisting of children, instead of women or men in full strength, will thus be enabled to perform the same portion of work as formerly required a full complement of hands, such essential improvement deservedly claims attention.

COUGH.—*Calves* are liable to take frequent colds, especially if they be exposed to the vicissitudes of the weather, before they acquire sufficient strength to undergo the changes of this climate: the consequence is a *cough*, that frequently proves fatal, if it be neglected.—For curing this malady, the following recipe is given in the "*Cardiganshire Landlord's Advice to his Tenants*;" Bristol, 1800: Let half a table-spoonful of spirit of turpentine be poured into the animal's nostrils, which must be held upwards, in order that the liquor

may flow into the throat: at the same time, the nose ought to be smeared with tar, and the calf be kept in the house for a few hours: this treatment should be repeated as often as the cough is troublesome.

CREAM.—*Corstorphine Cream* is a peculiar form of curd, much esteemed in the vicinity of Edinburgh, where it is prepared in the following manner: A vessel, the bottom of which must be perforated and stopped with a peg, is filled with skimmed-milk, and placed within a tub or pail nearly full of boiling water: here it is suffered to remain for 24 or 42 hours, till the milk coagulates, and the watery part has subsided. The latter is then allowed to drain, by withdrawing the peg; when the hole is again closed for 24 hours; at the end of which, an additional quantity of water is drawn off, and the curd generally acquires a due consistence: it is then briskly agitated with a wooden stick, and thus becomes fit for use.

In the summer season, this preparation affords an agreeably acid and cooling repast, which is in a certain degree nutritive; though it should not be eaten by those whose digestion is weak or impaired.

CROW-FOOT.—To the different species of this plant already described (vol. ii. p. 102), we have to add—9. The *aquatilis*, or WATER CROW-FOOT, which grows in ponds and ditches, where it produces white flowers, with yellow spots at the base, from May to July.—In the 5th vol. of "*Transactions of the Linnean Society*," we are informed by Dr. PULTNEY, that the cottagers in the vicinity of Ringwood, on the banks of the Avon, support their cattle almost entirely

entirely with this plant, which is devoured with such avidity, that it is deemed unsafe to allow them more than a certain portion. The cows thus fed, continue in excellent condition, and yield a sufficient quantity of good milk. These animals are so partial to the Water Crow-foot, that, excepting the scanty pittance they procured on the adjoining heath, five cows and one horse had not consumed more than half a ton of hay in one year:—Hogs likewise eat this vegetable, on which they remarkably improve: according to Dr. P. it is not necessary to allow them any other food, till they are put up to fatten.

CUBEBS, or *Piper Cubeba*, L. is a native of Java, whence its small round fruit is imported by the East India Company, in grains or seeds resembling pepper, which pay, on warehousing, the sum of 2l. per cent. according to their value; and, when taken out for home consumption, they are subject to the farther duty of 2½d. per lb.—In aromatic warmth and pungency, cubebs are inferior to pepper, consequently much milder, and deserve to be preferred in delicate or irritable habits.

CULTIVATOR, is an implement of husbandry, lately invented by Mr. WILLIAM LESTER, of Northampton; for the contrivance of which, the Society for the Encouragement of Arts, &c. in 1801, rewarded him with their silver medal. As this instrument promises to be of essential utility to agriculturists, we have given an engraved view of its construction.

Description of Mr. LESTER'S Cultivator.

(Fig. 2, Plate I. Supplement.)
A, is the beam.

B B, the handles.

C C, is a semi-circular cross-bar, containing several holes, by means of which the two bars D D may be placed at a greater or less distance from each other, as occasion may require.

D D, represent two strong bars, that are moveable at one end upon a pivot marked E; and extend thence, in a triangular form, to the cross-bar C C. With the former are connected the shares F, the upper ends of which are inserted through square holes, and may thus be fixed at any requisite height.

F, represents those seven shares, the lower extremities of which are shaped like small trowels, while the upper parts consist of square iron bars.

G, G, G, are three iron wheels, serving to move the machine, and which may be raised, or lowered, at pleasure.

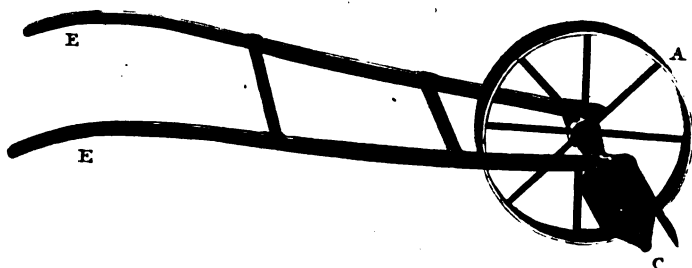
H, an iron hook, to which the swingle-tree and horses are to be linked.

When the machine is first employed on land, the bars D D, are expanded as widely as possible: in proportion as the clods are broken, and the soil becomes loosened, they are brought closer to the centre, so that the shares occupy a smaller space, and consequently the land will be more easily reduced to powder.

The object of Mr. LESTER'S invention is, to shorten the labour at present required for breaking up stiff soils; and, as these are most effectually pulverized in dry weather, his implement is peculiarly adapted for such purpose: according to his account, he is confident that one man, a boy, and six horses, will break up as much fallow-

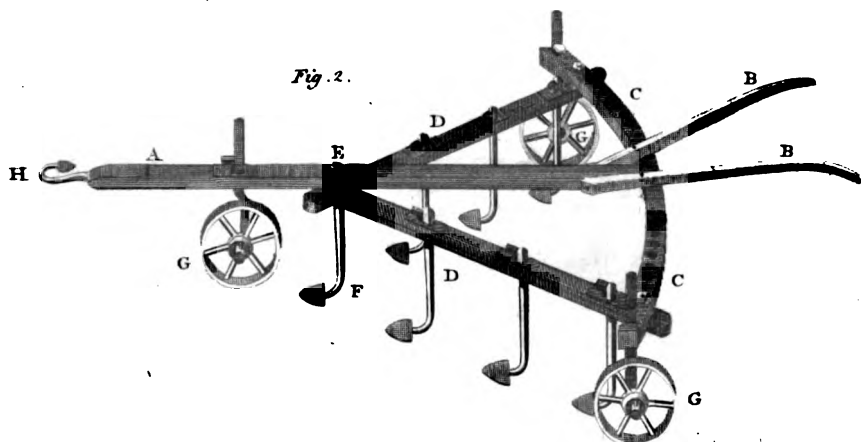
Rev. J. C. Munnings's Turnip-Drill.

Fig. 1.



M.^r Lester's Cultivator.

Fig. 2.



M.^r Ecclestone's Peat-Borer.

Fig. 4.



Fig. 3.



low-land in one day, and with the same effect, as six ploughs. In some states of the soil, it will be necessary to alter the breadth of the shares; but this circumstance must be regulated by the judgment of the husbandman; and, though the points of the shares, in consequence of such expansion and contraction of the cultivator, are slightly moved out of the direct line, yet this irregularity does not impede the progress of the implement.

Mr. LESTER's communication is accompanied by the certificate of a farmer, in the vicinity of Northampton, who states, that he employed the *cultivator*, in the summer of 1800, on a turnip-fallow; and believes it be very useful for cultivating such land; that from its alternate contraction and expansion, it is calculated to work the same soil, in a rough or fine state; by which means it unites the principles of two implements in one; and he is opinion, that it may be worked at any depth required, for the purposes of general tillage.

CUMMIN, or *Cuminum Cuminum*, L. is an exotic annual plant, propagated in the Isle of Malta, for the sake of its seeds; which, on importation, pay the duty of 8s. 0½d. per cwt.—They have a bitterish warm taste, accompanied with an aromatic, but not agreeable, flavour; and, though esteemed good carminatives, are seldom employed in medicine. An essential oil is obtained from them by distillation, possessing all the virtues of the seeds, and reputed to be a sovereign remedy in rheumatic cases. They are likewise employed externally, both in the form of a plaster and cataplasm.—Lastly, being exceedingly grateful to pigeons, avaricious proprietors of dove-cotes

sometimes incorporate the seeds with a saline earth (see PROZON-HOUSE, vol. iii. p. 378), in order to allure these birds; and thus stock their pigeon-houses, at the expence of their neighbours.

CURD, is the coagulated part of milk, after the whey is separated.

As curd contains the most substantial particles of milk, it affords a rich nourishment; and especially when produced by an artificial coagulation of this liquor, while in a *fresh* state. Many nations live on curds: thus, in France and Switzerland, the inhabitants almost exclusively use this preparation as their only solid food; employing the whey for drink. Among the Laplanders, curd is used to correct the alkaline nature of their aliment, and likewise to serve them as a substitute for an acescent condiment.

CURTAIN, an article of domestic furniture, consisting generally of calico, dimity, or printed cotton; which may be contracted or expanded at pleasure, and is usually appended to a bedstead, or to windows.

Curtains are at present considered more as an ornament, than as an article of conveniency, to beds; though, in many instances, they might be easily dispensed with; especially where one person only sleeps in an apartment. These appendages certainly occasion numerous accidents happening from fire; and which often originate from the absurd and reprehensible practice of reading in bed.

Those fanciful persons who cannot sleep without curtains, ought to suspend them across chairs, so that they may not exclude the access of air, by coming in contact

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with

with the bed; but that side, which is next the wall, may be wholly covered with the curtain.

CYDER.—Beside the different modes of *fining* cyder, already stated, we shall add the following recipes:

1. When the fermentation is nearly completed, let 2 or 3 quarts of *neat* cyder, or of French brandy, be mixed with 2oz. of pulverized alum, 3 lbs. of sugar candy, and 4 or 5oz. of *stone-roll* sulphur: to these ingredients a little cochineal may be added; and the whole, being tied up in a bag, should be suspended in a hogshead of cyder,

till the liquor become perfectly clear, and fit for use.

2. Beat up the whites of eight eggs, together with their shells, in a bason; mix with them two or three handfuls of bean-flour, finely sifted; half a pint of spirit of wine; and a sufficient quantity of honey or molasses, so that the whole may form a thick liquid; which is to be stirred into a hogshead of racked cyder.—Having had no experience of either of these preparations, we can only recommend the latter, as being less expensive, and more conducive to health.

D.

DEW-BERRY BUSH, or *Rubus caesius*, L. is an indigenous shrub, growing in woods and hedges, where its white prickly flowers appear in June or July, and are succeeded by dark-blue berries.—Although this shrub is one of the most troublesome on loamy soils, because its branches uncommonly spread over the surface of the ground, yet its sweet fruit imparts an agreeable flavour to home-made wines.—Nor are these berries less useful in the distillation of spirituous liquors; as well as for dyeing *unboiled* wool of a fine blue colour: for this purpose, the expressed juice should be previously mixed with alum and copperas; but, on adding a small proportion of galls, the shade may be rendered much darker.—If this juice be combined, in a marble mortar, with the fourth part of lime, verdigrise, and still ammoniac, then suspended in bladders, it will form a purple pigment,

which may be of service to artists.—Bönnick states, that the dew-berry bush has been usefully employed in *tanning* leather.

DIABETES, in *saturny*, denotes a profuse *staling* of horses: it is generally occasioned by too violent exercise, or by over-straining, &c. When this malady attacks old horses, or those of a weak constitution, it is seldom curable; because they rapidly lose their flesh and appetite, grow feeble, exhibit a staring coat, and ultimately perish. On the contrary, young horses, subject to this disease, may mostly be cured by frequent blood-letting, in small quantities; and the following decoction has often been administered with success. Take of Peruvian bark 4 oz.; Bistort and Tormentil-root, of each 2 oz.; boil these ingredients in two gallons of lime-water, till one half be evaporated: a pint of this liquor should be given three times a day; care being

being taken not to indulge the horse either with too much water, or moist food.

DOG'S-TAIL-GRASS, the *Reven*, or *Cynosurus echinatus*, L. an indigenous plant, growing in moist, sandy, or clayey soils, in the island of Jersey, and at Sandwich, in Kent; flowering in the month of July: its stalk seldom exceeds the height of two feet.—The mealy seeds of this vegetable may, in times of scarcity, be advantageously converted into *Bread*.—*BACHSTEIN* remarks, that sheep feeding on the Dog's-tail-grass, as well as the other species of this plant, become remarkably fat; and the mutton is of a peculiarly fine flavour.

DRAGON'S-BLOOD, or *Sanguis Draconis*, is a gummy-resinous substance, imported from the East Indies, either in oval drops, or in large grains resembling tears.

The genuine Dragon's-blood is obtained from the Common Dragon-tree, or the *Dracaena Draco*, L.—It is of a dark-red colour, free from any external impurities; and, if reduced to powder, it presents an elegant bright crimson hue. Being inflammable, it readily melts in the fire, but is not acted upon by water. In a solid form, it has no sensible smell or taste; but, when dissolved in rectified spirit, it yields a slight degree of pungency, and a deep-red tinge. This drug is also soluble in expressed oils, to which it imparts a red shade, though less beautiful than that extracted from the *ALKANET*.

Dragon's-blood is principally employed for staining (see vol. iii. p. 165): but, being generally sold in an adulterated state, it should be remarked, that the best kind ought always to be of a granulated consistence; as the sort manufactured

into small cakes, is of an inferior quality.—In medicine, it is at present exploded.

DRAINING.—A peculiar method of draining land with *chalk*, as a substitute for stones, has lately been practised in Yorkshire, with considerable success. It consists merely in cutting the trenches in the usual manner, and filling them with pieces of chalk; over which is laid a thick stratum of evergreen-boughs, that are covered with the sod or earth. The extremities of the main drains are arched to a short distance with brick-work; because the frost is apt to pulverize the chalk, and consequently the drain will be injured.—The principal advantage thence derived is, that *no moss will grow on the chalk*, whereas stone-drains are frequently obstructed by its growth: hence we are induced to recommend draining with *chalk*, to the attention of those farmers who have an opportunity of procuring that article, at a moderate expence.

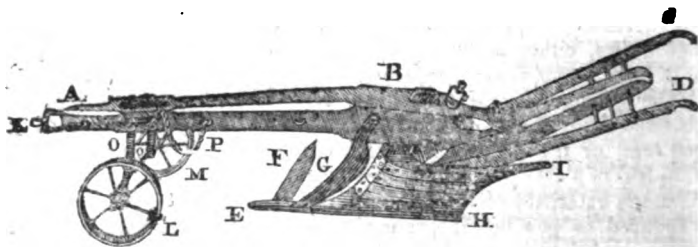
In the year 1792, the Society for the Encouragement of Arts, &c. awarded their silver medal to Mr. JOHN WADGE, for his exertions in draining land. The limits of this article not permitting us to analyze Mr. W.'s valuable communication, which is inserted in the 10th vol. of the Society's "*Transactions*," &c. we shall only observe, that the chief advantage consists in *boring*, or digging holes below the bottom of the trench; a practice, which, in some instances, is attended with the most beneficial effects; though it is not absolutely necessary, in ordinary cases.

A short but interesting "*Sketch of the Drainage and Improvement of a Marsh*," in the county of Cornwall, by Mr. RICHARD MOYLE, occurs

occurs in the 2d vol. of "*Communications to the Board of Agriculture.*" The bog contained 36 statute acres, which had from time immemorial been covered two or three feet deep with water; and which, during spring-tides, were overflowed by the sea, from a river taking its course through the land. As the low situation of the marsh rendered it impracticable to drain the bog by the aid of such river, recourse was had to a wooden pipe, furnished with valves, and connected with the shore at the part called *Half-ebb*. This expedient was attended with complete success: the soil was pared and burnt; large quantities of clay and

other manure were carted; and, after persevering in these exertions for five years, the whole of the land was "quite alive;" so that every kind of vegetables flourished with great luxuriance.—For a more detailed account of this remarkable improvement, the reader will consult the work above quoted.

In the 19th vol. of the "*Transactions of the Society for the Encouragement of Arts,*" &c. we meet with a description of a Drain-plough, constructed according to the plan of the patriotic Duke of BRIDGEWATER; and of which the following figure will convey an accurate idea.



A, B, is the beam of the plough.

C, D, are the handles.

E, the share, or sock.

F, the coulter, or first cutter of the sod, which is fixed to the share.

G, is the other coulter, or second cutter, which separates the sod from the land, and forwards it through the open space between F and G.—This coulter is connected both with the share and with the beam.

H, I, the sheath of the plough.

K, the bridle or muzzle, to which the *swing-tree* is fitted.

L, M, are two cast-iron wheels, that may be raised or lowered by screws at N, pressing on the flat

irons O, O; to which the axis of each wheel is fastened. These wheels regulate the depth, to which the share is designed to penetrate the soil.

P, is a chain with an iron pin, for moving the screws at O.

Six horses will be necessary to draw this plough, in clay-soil which have never been drained; every succeeding year, the implement must be drawn through the same gutters; when four horses will be sufficient.—In stiff, *flat* lands, this drain-plough cannot cut the ground too deeply; but, if it be employed on a declivity, five inches will, in general, be a sufficient depth.

depth. In soft, light soils, however, the plough should be directed as deep as possible; because the sides are apt to crumble into the gutters.—The best time for draining land is in autumn, about Michaelmas; or immediately after the grass is eaten off; and the whole operation ought to be completed between that season and Christmas.

DUNG.—The quality of the dung of different animals depends in a great measure on the richness, or poverty, of their food. Thus, if cattle be fed on lint, rape, or other oily seeds, it will be of the most fertilizing nature: the dung obtained from those kept on oil-cake, is next in value; then succeeds the manure produced from animals subsisting on turnips, carrots, parsnips, potatoes, or other succulent roots; next in effect, is that resulting from the best *hay*; after which follows that of cattle supplied with *ordinary* hay; and the poorest is that obtained from straw.—It deserves to be remarked, that the dung of *fat* animals is unquestionably richer, and consequently contributes more to fertilization, than that of *lean* creatures; which, if worked hard, and fed on straw, “is poor indeed.”

In the county of Middlesex, where all the produce of land is sold at very high prices in the markets of the metropolis, the soil is kept in *good heart*, by the immense quantities of dung which are brought in the carts on their return; because no cattle, though fed in home-stalls, can produce so large a supply. But, in counties that are more remote from London, the most effectual mode of manuring, in the opinion of Mr. MIDDLETON, consists in raising

green crops, for the purpose of feeding sheep and bullocks on the land. This, says he, is the only method, by which the loss of nearly all their urine can be prevented: for there is a great waste, equal perhaps to one-half, in the stables, cow-houses, sheds, fold-yards, and dung-hills of farms, even though conducted in the most careful manner; but, in those which are under ordinary management, such loss amounts to three-fourths; whereas no waste can possibly arise, when cattle are soiled on tares, clover, &c. in the field; the whole being immediately applied to the amelioration of the land, without incurring the expence of conveyance.—We do not pretend to decide on the practicability of this plan; which, in many situations, may be applicable to a considerable extent, and attended with great advantages: on the other hand, we are firmly persuaded, nay convinced from the experience of able and successful farmers on the Continent, that *stall-feeding, with cut hay and straw, is the greatest of all improvements made in modern husbandry.*

DUNG-HILLS.—The following judicious method of raising dung-hills, is practised in the county of Middlesex: it justly claims the attention of those farmers, who find it necessary to collect dung, for the use of their lands.—First, all the scrapings of roads, the mud of ponds and ditches, and the top-mould from gravel-pits, are spread in the most convenient places, as *bottoms for dung-hills*. On these strata is carted the whole of the dung, produced on their own farms, together with all that can be procured from the metropolis, and the different inns on the road; to

which are sometimes added chalk, ashes, soap-boilers' waste, brick-layers' rubbish, &c.

In this state, the heap remains till within a month of the time for spreading the manure on the land; when the whole is turned, and intimately mixed; the larger clods are then broken into small pieces, while such as may be too dry, are thrown into the middle. Thus treated, the mass unites more perfectly; and the putrefaction will be completed, while the matters continue in a heap. By this mode of forming the basis of dung-hills, the fertilizing liquor (that distils from the dung during the fermentation and heat which necessarily take place) is effectually preserved, and contributes greatly to the amelioration of the soil.

DYEING.—A fine *orange-yellow* tinge may be imparted to silk or cotton, by grinding ahotta on a moistened slab, and boiling it in double its weight of pearl-ash and water; the liquor is then suffered to settle for about half a hour; when it is drawn off, while hot, into a proper vat; and the stuff immersed, till it acquire the requisite shade. In order to heighten and fix the colour, it will be proper to dissolve some cream of tartar in hot water, and to add the solution to the liquor, so as to render it slightly acid: after which, the stuff

may be rinsed, and dried in the usual manner.

A beautiful *Saxon-blue*, for silk and woollen cloths, may be prepared by gradually pouring from five to eight parts of sulphuric acid on one part of finely pulverized indigo. The mixture must be suffered to stand for 24 hours; at the expiration of which, the effervescence will subside: the solution is then to be diluted with water, when it will be fit for dyeing.

Black: A hot decoction of Aleppo galls, in water, is first to be prepared in a proper vessel, in which cotton or silk stuffs, previously soaked in warm water, must be worked for some time. The superfluous liquid is now to be expressed, and the cloths should be immersed in a black dye, made by steeping alder-bark, and iron hoops for several months, in a cask of water; or they may be plunged into a solution of iron in vegetable acids. When the stuffs are thoroughly wetted, they must be wrung out, and afterwards soaked in a decoction of logwood, to which a little verdigrease is added. The last mentioned process ought to be repeated, till the colouring particles be sufficiently imbibed: during the intervals, it will be proper to rinse the cloths in water, and to dry them, in order to fix the colour.

E.

EAR.—Beside the causes assigned for the painful affection, known under the name of *Ear-ach*, it may be occasioned by taking cold from exposure to a current

of air, or from wet feet, and likewise from blows, falls, or similar accidents.

For persons peculiarly liable to take cold, the best preventive will be,

be, to keep both the head and feet warm and dry. In ordinary cases, Dr. DANCER is of opinion, that the patient will be relieved, by holding the painful side over the steam of warm water, and afterwards putting into the ear a piece of camphor wrapped in cotton, which has been previously moistened with a few drops of laudanum, or vitriolic æther. — Electricity may also be employed, in some instances, with great success.

Should the pain, however, be extremely acute, and accompanied with throbbing, and other inflammatory symptoms, it will be advisable to resort to blood-letting, and to apply blisters behind the ear, or to the neck. If an abscess be apprehended, warm poultices should be frequently laid on the part affected, before they become cold; and when such abscess breaks, milk and water, or chamomile tea with the tincture of myrrh, must be repeatedly injected by means of a syringe.

EAR-WIG. — The following method of extirpating these mischievous insects, is recommended by Mr. FORSYTH, who has successfully practised it for several years. Let old bean-stalks be cut into tubes, about nine inches long; then be tied up in small bundles, either with pack-thread, or the pliant twigs of young willows; and be suspended on nails against the wall, in the vicinity of trees. Early in the following morning, a board about 18 inches square should be procured, and a small wooden trowel: the bundles of such bean-stalks are now to be taken down separately, stricken against the board, and the ear-wigs be destroyed with the trowel, as they fall out of the stalks. — If this me-

thod be repeated daily, or every second morning, the increase of the insects will speedily be checked.

The propagation of these vermin may be still more certainly prevented, by immersing the shreds taken from trees that have been unnailed in autumn, in boiled soap-suds, for three or four days previously to using them again: in this simple manner, the eggs of ear-wigs, as well as those of other insects, will be effectually exterminated.

EGG. — In February 1791, a patent was granted to Mr. WILLIAM JAYNE, for his composition, which is calculated to preserve eggs. — He directs one Winchester bushel of quick-lime, 32 oz. of salt, and 8 oz. of cream of tartar, to be incorporated with such a quantity of water as will reduce the mixture to that consistence, in which an egg will float with its top above the surface. — In this liquor the eggs are to be kept; and the patentee asserts, that they may thus be preserved perfectly sound, for the space of two years at the least.

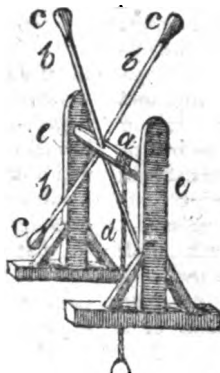
ELM-TREES are frequently subject to a kind of ulcers; which, if not timely attended to, eventually destroy them. Such as are planted in marshy grounds, or in the vicinity of rivers, are chiefly liable to this distemper: the ulcer generally appears on the side exposed to the south, and at a little distance from the root; though it sometimes occurs five or six feet above the surface.

The cause of this disease was, by DU HAMEL, supposed to be a *superabundance of sap*; which conjecture has lately been corroborated by the experience of M. BOURCHIER. In order to cure the trees thus attacked, the latter pierced the

ulcer with an auger, and afterwards fitted to the hole a tube that penetrated to a sufficient depth. He observes from experience, that the trees thus affected, yield a larger proportion of sap in serene than in tempestuous weather; and accordingly as the wound is more or less in a southern exposure: after two or three days, the sap-flow ceases, and the wounded part spontaneously heals.

EXERCISE.—Under this head,

we have already enumerated the different kinds of exercise; and their respective effects on the human body have been stated in the course of the present work. Many persons, however, being prevented from walking, riding, &c. in the open air, either by the inclemency of the weather, or from want of leisure, we have subjoined the following figure, representing a contrivance, that may serve as a substitute for dumb-bells.



The engine consists of a wooden cylinder, *a*, which turns on two central pivots, *e*, inserted in the upright posts.—*b*, *b*, are two rods, that may be made either of iron or of strong wood. These bars intersect each other at right angles, and are furnished with leaden weights at their extremities, *c*, *c*, *c*; which turn the cylinder with great velocity, when the rope *d*, attached to and passing round it, is pulled downwards. Farther, such weights

draw the rope up again with considerable force, while it is wound backwards and forwards over the cylinder.—As this machinery may be fixed in a garret, or other spare-room at the top of a house, the rope may be conducted through the ceiling into a lower chamber; so that sedentary persons, or invalids, may take sufficient exercise, without quitting their habitation, or exposing themselves to the vicissitudes of the weather.

F.

FACE-ACH, or *Tic douloureux*, is an acute pain in the face, which is sometimes accompanied by suppurating tumors: it mostly at-

tacks persons of delicate habits, and those who are uncommonly susceptible of cold.

To remove this distressing affection,

tion, the use of volatile salts, and other cephalics, is generally insufficient. Hence the tincture of valerian, with vitriolic æther, may with more advantage be resorted to, both externally and internally. Relief has, in some instances, been derived from the compound tinctures of castor and of asafœtida; but, if these various remedies prove ineffectual, the feet should be bathed in warm water, a foetid clyster be administered, and recourse had to electricity. A draught of vinegar or warm water, has occasionally procured ease; but, in very violent cases, opium only, under proper medical guidance, is capable of suppressing the pain.—Lastly, a new and efficacious cure for the face-ach, has been discovered by Dr. HAIGHTON:—He directs the nerve proceeding from the infra-orbital hole, to be divided; but this operation ought to be performed by a skilful surgeon; as, otherwise, irreparable injury might be committed on the eye, or contiguous tender parts.

With a view to prevent a return of this malady, the patient should undergo a course of tonic medicines, namely: take a copious draught of spring-water, early in the morning; repair to the tepid, or, if his strength admit, to the shower-bath; and use the Peruvian bark.

FILM, in farriery, is a thick pellicle or skin, that is formed on the eyes of horses; in consequence of which their sight is impaired.

In order to disperse the film, it has been recommended to reduce common salt and sugar of lead, to a fine powder, and put a little into the eye, so as to corrode the film. Another remedy consists in applying a small quantity of finely pul-

verized sal ammoniac daily to the part affected, till the obstruction be removed.

FLEA-LOCUST, or FROG-HOPPER, *Cicada*, L. is a genus of insects, comprehending 51 species, which are named chiefly from the trees they infest. Their beak is inflected, and the animals are provided with four wings.

The larvae of several species of the Frog-hopper discharge considerable quantities of frothy matter on the branches or leaves of those trees, on which they reside. This froth has been supposed, by naturalists, to be ejected with a view to secure these depredators against other insects, or to shelter them from the heat of the sun. Such excrement, however, presents a very disagreeable appearance; and, as those vermin are highly detrimental to trees, by devouring the leaves, Mr. FORSYTH directs them to be destroyed, by rubbing off the larvae with the hand; after which the tree should be profusely washed with soft water.

FOOD OF PLANTS.—In a select collection of "*Memoirs*," lately published by the Free Society of Agriculture, Arts and Commerce, in the Department of Ardenne, the following vegetative liquor is recommended for promoting the growth, as well as the flowering, of bulbous roots in apartments, during the winter.—Take 3 oz. of nitre; 1 oz. of sea-salt; half an oz. of salt of tartar; half an oz. of sugar; and one pint of rain-water. Let the salts be gradually dissolved in a glazed earthen vessel; and, when the solution is completed, add the sugar, and filter the whole. About eight drops of this liquid must be poured into every flower-glass filled with rain or river water;

water: these vessels should be kept constantly full, and the water be renewed every 10th or 12th day; a similar portion of the vegetative liquor being added each time. In order to ensure success, the glasses ought to be placed on the corner of a chimney-piece, where a fire is regularly kept in cold seasons.

FROST.—In the "*Giornale Encyclopedico*" of Vicenza, M. DE SAN MARTINO recommends the following expedient for preserving trees from the injurious effects of frost. This desirable object is accomplished by depriving those trees, which in cold climates require to be protected, of their leaves, at a period somewhat earlier than their natural decay in autumn. The sap will, consequently, be less copious in the vessels, and will circulate more slowly, while it becomes thicker; so that it will not freeze so readily; and, even if it should congeal, its volume will not be so much enlarged as if it were in a more diluted state. In adopting such expedient, however, it ought to be observed, that the leaves must be plucked gradually, at three or four different periods, so that the trees may be divested of their foliage before the usual time of its falling; for, if the whole were suddenly removed, the circulation of the sap would be checked, and the tree would probably perish.

FRUIT-TREES.—In this article we have stated a few circumstances, the knowledge of which may serve to ascertain the maturity of fruit, and consequently the proper time for gathering it.—The following directions for picking, preserving, and packing it for car-

riage, we insert on the authority of Mr. FORSYTH.

All apples, pears, &c. ought to be carefully gathered by hand, and laid in baskets containing dried grass, to prevent them from being bruised; and, if they fall spontaneously, some dry barley-straw or pease-haulm, should be prepared for their reception on the ground: in the latter instance, the fruit ought to be separated from, and sent to the table before that which is collected by hand; and such, as may be accidentally bruised, ought to be reserved for culinary purposes; because it cannot be long kept in a sound state.

When all the fruit is collected, it should be conveyed to the store-room; laid gently in small heaps, on dried grass; and their tops be covered with short grass, in order to *sweat*. Here it may remain for about a fortnight; during which time each apple, pear, &c. must be occasionally wiped with a dry woollen cloth, and those exposed on the surface should be placed towards the middle of the heap. At the end of this period, all watery ingredients that may have been imbibed during a wet season, will be evaporated: the heaps should then be uncovered, and each article carefully wiped; separating those which may be injured, or unfit for keeping.—During this process of sweating, the windows of the store-room, excepting in wet or foggy weather, ought to be continually open, in order to discharge the moisture perspiring from the fruit.

The usual method of storing apples, pears, &c. consists in laying them on clean wheaten straw; but, in this case, it will be necessary to examine them frequently, and

and to remove such as begin to decay; because the straw, by absorbing moisture, will become so tainted, as to communicate an unpleasant flavour.

Another mode of preserving fruit, is that of depositing it on shelves made of well-seasoned white deal, and covered with coarse thin canvas, on which the articles are to be laid, after being wiped perfectly dry: a piece of linen cloth, or thin flannel, or whitish-brown paper, must then be placed on the top, with a view to exclude the air, and to guard against the injurious effects of frost. Farther, it should be turned several times during the winter; because the more tender and delicate kinds are apt to decay on the lower side, if they remain long in a quiescent state; even though they may have been completely sound, when first selected for that purpose.

In the vicinity of the metropolis, where fruit is kept in store-houses for supplying the markets, it is generally packed in soft paper, disposed at the bottoms and around the edges of baskets or hampers: a layer of fruit is then put in, and covered with sheets of paper; after which successive strata of fruit and paper are placed regularly, till the vessel be full. The top is then provided with three or four double folds of paper, both to exclude the air and frost. Every sort is arranged in distinct baskets, to which labels are affixed, containing the name of the fruit, and the period when it will be fit for use.

The best mode of preserving fruit, however, in the opinion of Mr. FORSYTH, is that of packing it in glazed earthen jars, which ought to be kept in dry apartments. For this purpose, apples and pears

are to be wrapped separately in soft paper, and laid at the bottom of the vessel on a thin stratum of well-dried bran: alternate layers of bran and fruit are then to follow, till the jar be filled; when it should be gently shaken, in order to settle its contents. Every vacancy must now be supplied with bran, covered with paper, and the whole secured from air and moisture by a piece of bladder, over which the cover of the vessel must be carefully fitted.

With respect to the packing of fruit, which is to be conveyed to a considerable distance, there cannot be taken too great precaution. Boxes should, therefore, be made of strong deal, and of various sizes, in proportion to the quantity they are designed to contain: these will be proper for melons wrapped simply in paper; and also for pears, peaches, nectarines, plums, and grapes, being enveloped first in vine-leaves, and then in paper; but for cherries, and currants, flat tin boxes will be required.—If the fruits last mentioned are to be carried, successive layers of fine long moss, and cherries, ought to be arranged, till the box be full; so that, when the lid is closed, they may be in no danger of being injured by friction. For transporting melons, &c. similar strata of dried moss, and short, soft, dry grass are to be formed, in which the fruit is to be stored according to the manner above directed; being selected as nearly of the same size as possible: care also must be taken to place the largest at the bottom, and to fill up every interstice.—For the sake of farther security, each box ought to be provided with a strong lock and two keys; so that the persons packing and unpacking the fruit, may be respectively

spectively in the possession of one. The moss and grass should always be returned in the boxes ; and, with a little addition, they will serve the whole season, provided such materials be shaken up, and well aired, after each journey ; in order that they may remain sweet. Lastly, it will be necessary to cord these boxes firmly, with a view to prevent any accidents that may arise during their conveyance. If this method be carefully pursued, it will certainly be attended with success ; for, Mr. FORSYTH observes, that fruit thus managed, may be sent with perfect safety, either by coaches or waggons, to the remotest part of the kingdom.

FURNACE.—The construction of furnaces, so arranged as to consume the whole volume of smoke, is an object which has long engaged the ingenuity of artists.—Hence various contrivances have been proposed ; but few, we believe, for efficacy and simplicity, can come in competition with that invented by Messrs. ROBERTSONS, of Glasgow. The opening of their furnaces, instead of being closed by a door, consists of a quadrangular hopper or funnel, which is con-

tantly supplied with coals ; so that, in proportion as the fuel is exhausted, a fresh stock continually descends through the hopper. Thus, the first combustion, which disengages the greatest part of the smoke and flame, takes place near the mouth of the fire-place, and a considerable quantity of the smoke will, without any other contrivance, be consumed by passing over the red-hot fuel in the farther part of the furnace. But, as a perfect combustion of smoke cannot be obtained without the aid of atmospheric air, a cast-iron plate, about three quarters of an inch above the top of the hopper, is introduced, so that a slit is formed of this depth, and of an equal breadth to the front of the furnace ; through which a current of air constantly enters, and is then combined with the smoke. This aperture may be enlarged, or diminished, as occasion may require, by raising or lowering the iron plate, by means of an iron pin : thus, the supply of air may be proportioned to the quantity of smoke produced, and the whole of the latter will be advantageously used, before it can escape through the chimney.

G.

GERMANDER.—In the second volume of the "*Transactions of the Royal and Economical Society of Florence*," we meet with an interesting memoir by Dr. MENAUBONE, on the medical properties of the COMMON GERMANDER. Our limits permit us only to state, that Dr. M. strongly recommends the

leaves and shoots of this indigenous plant as a substitute for the Peruvian bark ; a hint which deserves the attention of medical practitioners.

GOOSEBERRY.—The husks of this fruit, when the juice is expressed for making wine, are usually thrown away : it appears, however,

ever, that they may with advantage be employed in distillation, and afford an agreeable spirit, resembling BRANDY. It has indeed been ascertained by experience, that such liquor, after having been kept a few months, was little inferior, in point of strength or flavour, to the best French Cognac.

GREEN.—The following method of preparing *Brunswick Green*, a beautiful colour, in great request on the Continent for oil-painting, and in the manufacture of stained paper, is inserted on the authority of M. KASTELEYN. He directs shavings of copper to be put into a close vessel, and sprinkled with a solution of sal ammoniac.—The metal first unites with the muriatic acid, and is dissolved, when it is precipitated by the disengaged ammonia, with which it combines. The precipitate is then to be washed, and dried either in wooden boxes, or upon an expanded cloth: the liquid now remaining may be repeatedly employed as a solvent for fresh portions of sal ammoniac, till it be completely saturated. M. KASTELEYN states, that three parts of such salt are sufficient for two parts of copper, and that the result will be six parts of colour.—This beautiful pigment is sold in Holland by the name of *Friesland Green*; and it sometimes forms an article of exportation; in which case it is generally adulterated with white-lead.

GUINEA CORN, or *Holcus Sorghum*, L. an exotic vegetable, growing on the coast of Africa: its stalks are large, compact, generally attaining the height of 7 or 8 feet, and producing abundance of grain.—It may be easily raised in sheltered situations, especially in exhausted hot-beds and other loose

soils, where its seeds should be sown early in the spring; as the large flowery tops appear in June.—In Tuscany, Syria, and Palestine, the flour made of this grain is mixed with other meal, and converted into bread; which, however, is generally brown, tough, and heavy. Hence the former is better calculated for milk-porridge that is equally wholesome and nutritive.—The juice exuding from the stalks of the Guinea-corn, is so agreeably luscious, that it affords excellent sugar, by a process similar to that adopted with the sugar-cane. The seeds furnish nourishing food, to poultry and pigeons, as well as for horses and hogs.—STRUVE, a German writer on economy, states, that he obtained from this grain good vinegar by fermentation; and, on distilling it, a strong spirit.

GUM, or GUM-SECRETION, a disease in trees, arising from various causes, but mostly from injudicious pruning; bruises, or injuries committed on the wood, or bark, by the hammer in nailing the branches against walls; pinching the shoots by making the trellises too tight, or by driving the nails too closely to the branches. It may also be occasioned by leaving the foot-stalks of the fruit after this has been gathered; by carelessly applying ladders; and especially where large boughs have been broken off, or inadvertently lopped.

This distemper may be known before the gummy secretion actually takes place, by the bark assuming a brownish cast, that gradually deepens, till the gum at length exudes in the form of small blisters. As soon as any of these symptoms are perceived, Mr. FORSYTH directs the infected part to be cut

cut out with a sharp knife, till the clean white bark and wood appear; after which the *composition* and *powder* (see p. 236 of the present volume) should be speedily applied. Lastly, in case any gum ooze out of the tree, it must be immediately scraped off; as the disease will otherwise rapidly increase:—the best time for this operation, in the opinion of Mr. F. is during wet weather; because the gum, being moistened, may then be easily removed without injuring the bark.

GUM, or YELLOW-GUM, is a species of *Jaundice*, to which infants are liable, in consequence of a retention of the meconium, or when the bowels are obstructed after their birth.

This affection may be cured, by occasionally administering a weak solution of tartar emetic, in the proportion of half a grain to four ounces of water, sweetened with manna, till it operate either by stool, or by vomiting: after which, a small tea-spoonful of castor-oil should be given in water-gruel. But, as the former medicine must be used with great precaution, we would preferably recommend one or two grains of ipecacuanha to be infused in an ounce of water, with a dram or two of manna, and to be taken in divided doses. If, however, the complaint be attended with convulsions, the infant may be immersed in a warm bath, and expeditiously wiped; a practice which is generally attended with better

effects than the swallowing of purgative elixir, laudanum, and other antispasmodics; even though such remedies should consist only of single drops, or half drops. Hence, we seriously caution parents and nurses against these precarious drugs, which cannot fail to undermine the constitutions of children.

GYMNASTICS, or the **ATHLETIC ART,** denotes the dexterous performance of certain exercises of the body, whether for defence, health, or amusement.

On the first institution of society, men being aware of the necessity and advantage of military manœuvres, for repelling the attacks of enemies, national games were established; and public rewards were granted for the encouragement of youth. These exercises consisted of running, leaping, swimming, wrestling, &c. Although, from the change of manners, and the different systems of tactics now prevailing, such games become less requisite, yet as they doubtless contribute to the preservation of health, and tend to invigorate the juvenile body, we conceive that they might, with certain restrictions, be advantageously re-established in academies. A discussion of this interesting subject, however, being foreign to our plan, we refer the reader to M. SALZMAN'S "*Gymnastics for Youth*," 8vo. 1800; which is an useful practical guide, and merits the attention of those who are concerned in the superintendence of schools.

H.

HAMPSTEAD-WATER is obtained from a mineral spring, which

rises in the village of that name, in the vicinity of the metropolis.

This

This chalybeate was formerly in considerable repute for its medicinal properties; and, though at present seldom employed, it is possessed of considerable service in chronic affections, proceeding from languor, or debility of the system; in chlorosis, indigestion, hypochondriasis, and all other cases, where tonic and stimulating remedies are indicated.—It ought to be drunk on the spot; as its volatile parts escape, and its virtues are impaired by exposure to the air: after drinking it, the patient should either walk or ride, according to the nature of his complaint, or strength of his constitution; with a view to promote its operation. The proper season for resorting to this spring, is from April to the end of October; the dose depending upon age, habit, and other circumstances. In general, a quarter of a pint may be drunk half an hour before breakfast; a second dose about an hour after it; and a third about noon; which portion may be gradually increased to half a pint, if the stomach can support it. Such course is often continued for two or three months; when the use of the water is suspended for a few weeks; because a short discontinuance has been productive of good effects.

Hampstead-water operates powerfully as a diuretic, but is apt to occasion constipations of the bowels: hence it will be advisable to add a small portion of Epsom or other aperient neutral salt; or it may be combined with the saline mineral fluid of *Kilburn*; in which case the compound water will be nearly as efficacious as the celebrated springs of *Cheltenham* or *Scarborough*.

HAT.—In November 1801, a patent was obtained by Messrs.

JOHN WALKER and PETER ALFHEY, for contriving water-proof hats and caps, as likewise for rendering silk, linen, leather, cotton, and other materials for wearing apparel, water-proof.—Their invention consists in providing the respective articles with a coat of oil-paint; after which they are japanned with a varnish mixed with lamp or ivory-black. The caps and hats are manufactured of paste-board covered with canvas, and treated in a similar manner; but the leather, to be made water-proof, should not be previously dressed with oil, or any unctuous matter.—For a more minute account of the method in which the different compositions are applied, the reader will consult the 16th vol. of the "*Repertory of Arts*," &c.

HAWK-MOTH, or *Sphinx*, L. is a genus of insects, comprising 165 species, ten of which are discovered in Britain, and variously named, according to the trees they infest.

The generality of hawk-moths spin their cods under ground, interweaving with their threads small particles of grain and earth. They appear either early in the morning, or after sun-set: their flight is slow, and often accompanied with a peculiar sound. The caterpillars of these insects are usually found rolled up in the leaves of trees; some being green, and smooth; others brown or yellow; again, others are spotted, and furnished with rings, or belts.

The most certain method of preventing the depredations of hawk-moths, consists in collecting the leaves they inhabit, and crushing the insects; after which the trees should be washed with a mixture of clear lime-water, and a decoction of tobacco leaves.

leaves. Such cleansing will, according to Mr. FORSYTH, also be found an effectual remedy, when the moths are in the state of larvae; having previously picked off and destroyed the caterpillars.

HICCOUGH.—Different remedies have already been suggested, for removing this temporary affection; as they, however, may not always be applicable on the spur of the occasion, we are informed by a correspondent, that a firm ligature on the artery at the wrist, will afford relief, if it be continued for about one minute; but, if the first attempt should not prove successful, he recommends it to be repeated; when such convulsive efforts will, in general, be suppressed.

HOG.—In the conclusion of this article, we have pointed out those breeds which deserve more particular attention: to these ought to be added (vol.ii. p. 471) the following, namely:

5. The *Large Spotted Woburn Breed*, introduced by the late Duke of BEDFORD:—from the experience of the Earl of EGREMONT, and other able breeders, it clearly appears, that these animals are superior to the Suffolk breed; the former being not only more hardy, but also more prolific, and attaining double the size, in the same period of time.

6. The *Rudgewick Hogs*, are thus denominated from a village on the borders of Surrey and Sussex: this race of animals is remarkable for the astonishing weight they attain, in the course of two years, which exceeds that of other swine at a similar age, in the proportion of at least two, and often three, to one. Hence, they deserve to be more generally reared, and their number

ought to be increased throughout Britain; because they repay the expense of their keeping more speedily than any other breed.

HONEY-DEW is very detrimental to fruit-trees, from its viscid quality; because it closes their pores and impedes their perspiration.—Mr. FORSYTH therefore directs those trees, which are most liable to such distemper, to be sprinkled with a mixture of lime-water and urine; after which they should be washed with the liquid, stated in the article **BLIGHT** (p. 399, of this Supplement). These remedies, however, ought to be applied early in the morning; in order that the trees may become dry, before the solar rays produce intense heat; as, otherwise, the blossoms and leaves are apt to be scorched, and thus to be materially injured.

HORSE-CHESNUT.—The bark of this tree is, on the Continent, occasionally substituted for the Peruvian; and it likewise appears, that an extract may be prepared from the ripe fruit of the horse-chesnut, which answers all the purposes of that obtained from the expensive foreign drug. For this communication, we are indebted to Dr. FUCHS, of Jena; who directs the chesnuts to be deprived of their prickly husks, and an extract to be prepared from them, in the usual manner.

HOT-HOUSE.—A glass-frame for buildings of this description has lately been invented by M. BERNARD: it possesses considerable advantages over those in common use. The lower part consists of a double square of glass-panes set in wood, or in wood and lead. The upper part is composed of panes of glass fixed in wood, and terminates

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is an oblong six-sided prism: it may be taken off at pleasure, by a ring connected with the top.—The whole of this fabric has the singular advantage of throwing a great body of light on the plants, while it prevents that sickly growth, denominated *etiolation*; and renders it easy to produce a variety of temperatures, as occasion may require. M. BERNARD's hot-house is supplied with heat, at a trifling expence, by common oil; the smoke of which is conveyed round the frame, by means of a flue.

HYACINTH.—In a late volume of the "*Annales de Chimie*," M.

LEROUX has announced the discovery of a gummy substance, contained in the roots of the *Hyacinthus non-scriptus*; which is an indigenous vegetable. This substance appeared, on examination, to possess similar properties with the generality of gums, and a considerable portion of farinaceous matter; which may, by proper management, be extracted. As it abounds in the bulbous roots of the Hyacinth, so as to render it an object of attention, M. LEROUX conceives that it might be advantageously converted into *Starch*.

I.

INSECTS.—A new mode of preventing their depredations on *apple-trees*, has lately been proposed in America. It consists simply in stripping off the whole body of the bark; an operation by which millions of insects, together with their eggs, are immediately removed. Such practice, indeed, has generally been supposed to kill the trees; but it appears, from the experiments instituted by Dr. MITCHILL, of New-York, that about Midsummer, apple-trees may be entirely decorticated, without receiving the least injury from the operation. Thus, a tree peeled in the summer of 1798, withstood the effects of intense frost in the severe winter that succeeded; another, which had been deprived of its bark in June, 1799, re-acquired it completely before the end of September; and yielded as large a crop of fruit, as if it had not been deprived of its rind.—Dr. MITCH-

ILL observes, "There is no doubt, an orchard might be treated in this manner with perfect safety, if the operation were well-timed;" and, as the climate of North America is considerably colder than that of England, these experiments claim the attention of British Orchardists.

IRON.—As vessels, made of this metal, are liable to cracks, which frequently render them useless, we insert, on the authority of M. KASSTELYN, the following directions for preparing a lute calculated to fill up such fissures:—Take six parts of yellow potter's clay; and one part of iron filings; incorporate these ingredients with a sufficient quantity of linseed oil, so as to form the whole into a paste of the consistence of putty.

Although a variety of varnishes have been contrived for securing iron and steel, in a polished state, from the effects of *rust*; yet we

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are persuaded, that the following is the most simple and effectual method of preserving them. It is well known, that the oil expressed from the fruit of the chocolate-tree never becomes rancid, provided the nuts have been moderately roasted, before they are submitted to the press. This oil is asserted by M. Von CRELL, to be eminently adapted to the purpose before stated: and we may add, from recent experience, that the animal oil obtained from eels, if applied to polished iron, steel, or other metals, especially when used in machinery, such as wheel-work, has been attended with similar good effects.

ITCH.—A new remedy for this loathsome affection, has lately been discovered by M. GRILLE. — He had observed, that persons employed in the manganese-mines, of Macon, in France, were not liable to this cutaneous disease; and that the neighbouring workmen, when attacked by the itch, were accustomed to resort to these mines, with a view to be cured of their complaint: thus, the tormenting irritation speedily ceased; the eruption disappeared; and the skin became perfectly sound.

Hence, M. GRILLE was led to conjecture, that *manganese* might be employed as a remedy for the itch. He therefore formed 6 parts of this semi-metal in a pulverized state, and 16 parts of fresh hog's-lard, into an unguent: — several persons troubled with this disease were directed to rub such ointment over their bodies; at the same time, the usual medicines for opening the bowels, were administered; and the malady was, in a few days, completely removed.

JUNIPER-TREE. — Several useful purposes, to which the fruit,

as well as the wood of this valuable shrub, may be applied with advantage, have already been stated: and, as the juniper abounds in various parts of England, we extract the following facts relative to its more extensive utility in Finland; published by M. ALOPÆUS, in the "*Transactions of the Economical Society of Petersburg.*"

1. The water used for brewing malt-liquors, is previously boiled with juniper-twigs; which are believed to improve both the salubrity and flavour of the beer.

2. The leaves are employed for fumigating houses, with a view to correct foul air, or expel pernicious vapours.

3. Milk-vessels are preferably made of juniper wood, which is supposed to contribute to the preservation of milk in a sweet state, and to render it more palatable. — When other woods are used for such vessels, they are, for the same purposes, washed with water in which juniper-twigs have been boiled.

4. Warm decoctions of this shrub are frequently given to cows, and sometimes to sheep; in order to enrich the quality, and increase the quantity, of their milk.

Lastly, juniper-berries are roasted, ground, and prepared in the manner of coffee, for which they are frequently substituted; affording an excellent palliative in calculous and gouty complaints. — From these berries may also be brewed a cheap, wholesome, and well-flavoured beer, by the following process, which has but lately become generally known in Sweden: — Let 30lbs. of clean juniper berries be pounded in a mortar (we suppose, without bruising the stones), and be put in a common mash tub, together

together with 2½ buckets of cold water; suffering the whole to stand 24 hours. When the juice of the berries is sufficiently extracted, the liquor must be drawn off, and boiled in a copper, being carefully skimmed during the ebullition. A due portion of hops is then to be boiled with a little of the wort; incorporated with the whole; and, as soon as it becomes lukewarm, the yeast ought to be added in

the usual manner. When the fermentation ceases, the beer should be poured into a barrel containing a little isinglass; and carefully closed with a bung.—Such beverage is very salubrious and aromatic; but, as it ferments more tardily than common malt liquor, it is apt to become sour: hence, M. ALOPÆUS advises only a small quantity to be brewed at a time.

K.

KILBURN-WATER, is a saline mineral fluid, obtained from a spring at Kilburn-well, about two miles from the end of Oxford-street, London.

This water was formerly in great repute, but is at present seldom employed. Nevertheless, it promises to be serviceable in cases of habitual costiveness, where powerful laxatives would be productive of dangerous consequences; as it may be used with safety, till the intestines have recovered their na-

tural tone. It may farther be advantageously taken by persons of sedentary lives, who are peculiarly subject to hypochondriasis, indigestion, and other disorders arising from relaxed habits. The dose is from one to three pints, which should be drunk at short intervals, till it produce a purgative effect: and, as its operation is very slow, it appears to be eminently calculated for persons, whose stomachs are delicate or impaired.

L.

LACKEY-MOTH, or *Phalæna Bombyx Neustria*, is a species of moth that commits great depredations on fruit-trees; around the branches of which it deposits numerous eggs, that exhibit the appearance of a necklace. These are very hard, and adhere closely to the bark; so that it becomes necessary to remove them by a knife; care being taken to spare the bark

as much as possible. Next, the composition and powder mentioned in the article TREE (p. 238 of this vol.), must be applied to every part which may have been wounded by the instrument.

LETTER.—A new method of copying letters has lately been proposed; which is certainly less expensive, and promises to be nearly as expeditious, as that obtained by

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means

means of *Copying Machines*:—we have, therefore been induced to subjoin the following directions.

First, the letter to be copied, must be written with good black ink, in which a little sugar has been dissolved. Damp, unsized paper, or such as has previously been rendered sufficiently porous by suspending it over steam, is then to be adapted to the size of such letter, and be laid on the writing, which ought to be in a dry state. Several clean sheets are now to be arranged on the copying paper; and a flat iron, moderately heated, should be passed uniformly over the whole, till it be thoroughly dried.—If the original be written on both sides, it must be placed between a double sheet of such unsized paper, and managed in the manner above directed; when an exact copy will be procured. In this instance, however, the iron must be applied with the greatest expedition; lest the unsized paper become too dry, or communicate its dampness to the ink; in which cases, either no impression would be taken, or the ink would sink: lastly, the iron ought to be pressed on the paper longer than is usual for single sheets; in order that the heat may be regularly diffused, and the full effect be ensured.

LIVERWORT.—All the indigenous species of the lichens contain a considerable portion of viscid matter; which has, by the Earl of DUNDONALD, been successfully converted into a gum, possessing all the properties of the *SENega*, at present used by calico-printers.—These vegetables abound chiefly on trees, growing in poor stiff soils: they attain to maturity in three or four years; so that a crop

may be taken from the same tree, every fourth year.

The liverwort is furnished with an external skin, beneath which is found a green resinous substance: the remainder is composed partly of gum, and partly of an animal fibrous matter, that is insoluble both by heat and the action of alkalies. In order to extract the gum from such plants, they are first scalded two or three times in boiling water; in consequence of which, the rind or skin is separated, together with the greater part of the resinous ingredient. The vegetables, thus prepared, are next put into copper vessels and boiled, in the proportion of 1lb. to 2 gallons of water, for four or five hours; half or three quarters of an ounce of soda or pearl-ashes, or half a pint of volatile alkali, being added to every pound. The boiling is continued till the liquor acquires a gummy consistence; when it is strained through a hair sieve, and the residuum is expressed through hair-cloth bags, by means of presses similar to those used by tallow-melters.

The extract thus obtained, is then suffered to stand for 10 or 12 hours; after which it is strained, and evaporated in lead or tin vessels, placed over stoves moderately heated by fuel, or by the steam of hot water, till it be of a proper consistence for block-printing. If such gum, however, be intended for making ink, manufacturing paper, or staining and stiffening silks, crapes, gauze, &c. Lord DUNDONALD observes (in his Circular Letter addressed to the Calico Printers of Scotland), that no *alkaline salts* must be employed for extracting the liverwort; and the boiling be

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continued for a longer time, and with a moderate degree of heat : thus, the gummy extract will become nearly colourless ; but, if volatile alkali be used, it will be necessary to substitute *iron* vessels for those made of copper.

Lord D.'s gum has been found to answer every purpose for which it was designed : as its preparation is not only cheaper, and will produce a considerable saving of money annually sent to Senegal, but will also afford employment to numerous women, children, and others, in collecting, as well as in preparing, the lichens, it promises to be a national benefit.

LOCK.—In June, 1801, a patent was granted to Mr. HOLEMBERG, for his invention of locks or fastenings adapted for general use, on a new and improved construction.—The external form of the locks, thus manufactured, corresponds with those in common use : internally, however, an orbicular bolt is substituted for a rectilinear one, the security of which is increased by an inside tumbler that is fastened by a flat spring bolt. The whole manufacture of this lock is remarkable for its simplicity and ingenuity, with which it combines the important advantage of *security* ; so that this contrivance justly merits the preference.

LOGIC, is the art of thinking and reasoning with judgment and propriety : or, it may be defined to be the history of the human mind ; because it traces the progress of knowledge from the first and most simple conceptions, through all their various combinations, grada-

tions, and the inferences that are drawn from a comparison of ideas.

Logic is, doubtless, one of the most important sciences that can be impressed on the young mind ; inasmuch as it unfolds the nature of the faculty of reflection, while it displays the proper manner in which the mental powers are to be exercised, in the pursuit of truth and knowledge. Farther, it cautions us against those errors and mistakes to which we are liable in consequence of inattention ; while it teaches us to discriminate between *real* and apparent truth ; being thus admirably calculated for the investigation of interesting subjects, both of literature and morality ; as it enables parties to detect the fallacy of ARGUMENT. We could with pleasure point out other essential advantages, resulting from the art of thinking ; and, though a reference has been made from our first volume to this article, for a farther investigation of error in arguments, yet, as such discussion would lead us into too wide a field of speculation, we refer the reader to the following excellent works, in which the first principles of reasoning are clearly developed, and the juvenile mind is taught to distinguish between truth and falsehood.—1. "*Elements of Logic*," by Prof. DUNCAN, of Aberdeen, 8vo. ; 2. Dr. TATHAM'S "*Chart and Scale of Truth, by which to find the Cause of Error*," &c. 2 vols. 8vo. ; and 3. Mr. COLLARD'S "*Essentials of Logic*," &c. 12mo. 2d edit. pp. 223, 1796.

M.

MANURE.—The utility of clay on poor lands has already been stated in this article, vol. iii. p. 161 : we now submit the following fact to the consideration of our readers.—In the 2d vol. of "*Communications to the Board of Agriculture*," a paper is inserted on the use of clay and marle, by Mr. JOSEPH ROWELL, on whom the Board conferred their gold medal. Thirty years since, Mr. R. hired a farm, consisting of 1400 acres, the greater part of which was poor heath land : during that period, he has broken up and manured the soil with nearly 140,000 loads of clay and marle, at the expence of 4958l. : his indefatigable labours have been amply compensated, and the rental of the farm has been increased from 150l. to 700l. per annum.—Facts, like these, demand most serious attention ; and those of our readers, who wish to acquire minute information respecting Mr. R.'s management, will consult the valuable work above cited.

MERCURY.—This mineral being of extensive utility, both in the arts and in medicine, various base metals are frequently combined with it, in order to increase its weight : such fraud may, however, be detected by the dull aspect of the quicksilver ; by its tarnishing on exposure to the air ; and by the black sediment deposited, when it is shaken with water, in a bottle. The substance, chiefly employed for this nefarious practice, is lead ; a very large proportion of which unites with mercury, especially if zinc or bismuth be previously added.

In order to ascertain the adulteration with lead, quicksilver should be agitated with a little water ; after which the fluid must be strained, and the mercury digested in distilled vinegar. By this process, the oxyd of lead will be dissolved, and will deposit a blackish precipitate with sulphurated water. If mercury has been sophisticated with bismuth, the latter will appear in the form of a white sediment ; on pouring a solution of nitre, prepared without heat, into a vessel containing the suspected metal and distilled water.—Tin may be discovered, in a similar manner, by a weak solution of nitro-muriate of gold, which produces a purple sediment ; but zinc may be detected by simple exposure to heat.

MILDEW, a distemper which, from its clammy nature, is equally injurious to trees and plants, by closing up their pores, so that their perspiration is obstructed, and their growth is checked.—Contrary to the commonly received opinion, Mr. FORSYTH has observed, that fruit-trees are more liable to this malady, when planted against South and West walls, than those exposed to the East ; and, by removing such diseased trees to North or East walls, they have perfectly recovered.

Where danger is apprehended from the mildew, Mr. F. advises the trees to be sprinkled with urine and lime-water ; but, if the young shoots be much infected, it will be necessary to wash them with a woollen cloth, dipped in the mixture, which has been specified in the article BLIGHT (p. 399, of this Supplement), with a view to clear them

them of all glutinous or viscid matters; so that their exhalation may not be impeded.

MILL.—In September, 1801, a patent was granted to Mr. ZACHARIAH BARRATT, for a portable mill, designed to grind corn; and which may be worked either by wind, water, or horses. This contrivance differs from the common mills, chiefly in the following particulars: 1. That its size may be enlarged, or reduced according to circumstances; the whole running on castors; 2. The mill-shaft is moved by a crown wheel, containing three notched orbits, each being at some distance within the other; and which wheel may, by a slight alteration, be constructed so as to be set in motion, either by sails, by horses, or by water; and lastly, the machine may, if required, be conveniently erected at the gable end of a barn.—A more particular account of this mechanical invention is given in the 16th volume of the "*Repertory of Arts*," &c. where the apparatus is illustrated with an engraving.

Another patent was lately granted to Mr. THOMAS WRIGHT, for a *Hand Stone Corn Mill*. The frame of the machine is three feet square, and three and a half feet in height: the stones are 18 inches in diameter, and are inclosed in a tub, supported by two cross-bearers. Beneath these stones, there

is a lever, in which is inserted an iron pin; that passes through the centre of the bed-stones, and communicates with various machinery; that sets the whole in motion.—Our limits not permitting us to detail its constituent parts, we can only add, that a drawer containing three sieves is placed under the stones, for the reception and sifting of the meal. The price of this mill is 16, or, with the drawers and sieves, 17 guineas; and the machine is asserted to grind six bushels of grain, in one day, with perfect ease.—A farther account of Mr. W.'s ingenious contrivance may be found in the 38th vol. of "*Annals of Agriculture*," where his description is illustrated with an appropriate plate.—See also **WATER-MILLS**; in this Appendix.

MOSS.—This vegetable production being very detrimental to the growth and health of fruit-trees, Mr. FORSYTH advises it to be carefully removed in the months of February or March; after which the scraped trees must be washed with a mixture of fresh cow-dung, urine, and soap-suds.—If this operation be repeated in autumn, when the trees are destitute of leaves, it will not only prevent the production of moss, but will also destroy the eggs of numerous insects, that would otherwise be hatched; while it contributes essentially to promote vegetation.

N.

NETTLE.—Some interesting experiments have lately been made by M. ZANNETINI, in Italy; from which it appears, that the flowers

and seeds of the Common Nettle may, with efficacy, be substituted for the Peruvian bark, in all febrile affections, especially in tertian and quartan

quatan agues. This native vegetable operates more speedily than the foreign bark; and, in large doses, induces a lethargic sleep: the portion to be given, ought never to exceed one dram, and should be administered in wine, two or three times in the course of 24 hours.—The same cautions, that are neces-

sary in the use of the Peruvian bark, are likewise to be observed in taking the seeds and flowers of the nettle. Lastly, M. ZANNETINI recommends a slight infusion of the latter, in wine, as an excellent preservative for those who reside in marshy and unwholesome situations.

O.

OIL.—In April, 1792, a patent was granted to Mr. CHA. GOWER, for his method of depurating and improving animal oil. He directs equal quantities of oil, and of water previously acidulated with a due proportion of vitriolic acid, to be poured into a barrel or other vessel, which must be placed near a fire, and briskly agitated, in order to unite the two fluids. The liquor is then passed into pans, with a view to complete the solution of the gelatinous parts; and that the water may sink to the bottom; when the clear oil is decanted. Should, however, the oil intended to be purified have a *turbid*, or *ropy* appearance, the patentee directs equal parts of such liquid, and pure water, to be mixed with a little yeast, and shaken in the manner above-mentioned. When the fermentation ceases, the whole must be poured into similar pans, where all feculent particles will subside, and the pure oil float on the surface, whence it may be drawn off for use.

OPODELDOC, a well-known liniment, which is prepared by digesting 3 parts of soap in 16 parts of the spirit of rosemary, till the former be dissolved; when one

part of camphor should be incorporated with the whole.—This unguent is of great service in bruises, rheumatic affections, and similar painful complaints; but, being very volatile, it ought to be kept in bottles closely stopped, to prevent the access of air.

ORNITHOLOGY, is that science which treats of birds; describing their form, animal economy, and various uses.

Having already specified the natural habits, as well as the useful purposes, together with the opposite qualities, of the feathered tribe, under many individual names of birds, and especially those which are natives of Britain, in the preceding alphabet of this work, we shall, at present, only subjoin a few general observations, and conclude with an enumeration of the most remarkable objects of this class; the characters of which have been stated in vol. i. p. 58.

Although birds are, by their peculiar form, distinguished from all other creatures, yet their *internal structure*, in many respects coincides with that of mammillary animals. Thus, both have a heart with two ventricles and two auricles; red, warm blood; and solid bones;

bones; but which, in the former, are almost uniformly hollow, and contain no marrow. Through these concave bones, the air communicates with the lungs, that are grown together with the back and the ribs; being connected with different cellular webs, which serve as reservoirs of air.—The flesh of birds also resembles that of the mammillary tribe; but the urine of the former, though secreted in the kidneys, is evacuated by the same canal through which their excrements are discharged: nor is their bile collected in a peculiar gall-bladder; for it is, in most instances, conveyed from the liver directly to the intestines.

The stomach of birds is either furnished with a hard membrane for grinding their food; which is the case with all such as subsist on grain; or, it has the power of dissolving their aliment, by the gastric liquor secreted in all carnivorous birds, being similar to that found in the digestive organs of men and quadrupeds; but the former possess the advantage of spontaneously vomiting hair, feathers, and other indigestible matters.

The instinct displayed by every species of birds, in constructing permanent and artificial nests, in the most appropriate spots, deserves the admiration of contemplative minds; though such proofs of providential care, and wisdom, are often regarded with indifference: this extraordinary effort to propagate their species, in the most convenient manner, is the more remarkable, as almost every genus of these creatures build habitations of a peculiar form, and with the most proper materials. Another diversity prevails in the shape, colour, and number of their eggs;

the deficiency of which the female supplies, in case one or more have been robbed from her nest. Not is the migratory instinct of many birds, in autumn, less surprizing; for, at the approach of winter, they often retire to more genial climes, in order to avoid the hardships arising from cold weather and want of food; both being removed on their return in the spring. This wonderful propensity is evident, even in those creatures which are confined in cages; and which, at that season evince an unusual degree of anxiety and turbulence, in their captive state.

Lastly, it deserves to be noticed, that all birds are once, and many kinds of them twice, annually, subject to a change of their feathers, which is commonly termed the *moulting season*: this distemper arises from an obstruction in the alimentary ducts of the quills, beneath which nutritive matter accumulates, and thus forcibly propels the feathers. At this period, birds appear diseased, or in a state similar to that proceeding from the obstructed oleaginous gland, which is situated above their fundament; and which secretes an oily fluid designed to lubricate their downy coat; thus enabling them to resist moisture.

Without these charming warblers, the most beautiful and fertile regions of the earth would exhibit a silent, and often dismal, scenery. How much, therefore, are mankind indebted to these airy companions of their journey through life!—Male birds greatly surpass the females in beauty, song, and size; excepting in those of prey; where, in general, the contrary prevails. Many species of the winged tribe are so remarkably docile, as to imi-

tate

tate human speech, and to learn melodious tunes. But, independently of the pleasure thence derived, they are farther of material service to the inhabitants of a country, more especially in hot climates, by destroying myriads of insects, and devouring carcasses; which would otherwise prove an intolerable nuisance. The occasional mischief and damage committed by some kinds of birds, on the fruits of fields and gardens, is amply counterbalanced by their extensive services in general. Hence, numerous species which furnish us, either with their palatable flesh and eggs, or with their useful feathers, have been gradually domesticated, so as to become the inmates of our habitations; and particularly those which recommend themselves, either by their beautiful plumage, or by the sweetness of their harmonious strains.

In order to afford a view of the principal kinds belonging to this interesting class of animals, we have been induced to present the

reader with the following arrangement:

I. *Domestic and Tame Birds*:—Cock and Hen; Turkey; Goose; Duck; Swan; Pigeon; Peacock; Pheasant; Guinea-hen, &c.

II. *Wild, useful Birds*:—Bustard; Woodcock; Grouse; Heathcock; Partridge; Quail; Lark; Thristle; Ortolan; Starling, &c.

III. *Singing Birds*:—Nightingale; Hedge-sparrow; Red-breast; White and Yellow Wagtail; Wren; Gold-crested Wren; Canary-bird; Greater Red-pole; Chaffinch and Brambling; Goldfinch; Siskin; Fly-catcher; Bullfinch; Greenfinch; Titmouse; Swallow, &c.

IV. *Marshy and Aquatic Birds*:—Crane; Stork; Grey Heron; Bittern; Gull; King-fisher; Snipe; Lapwing; Water-hen, &c.

V. *Birds of prey*:—Eagle; Falcon; Owl; Butcher-bird; Raven; Crow; Jack-daw; Magpie; Nutcracker; Garrulous Roller; Woodpecker; Bee-eater; Haw-finch; Oriole or Cherry-bird; Sparrow, &c.

P.

PAINT.—In February 1799, a patent was granted to Mr. JOSEPH TIDMARSH, for his invention of a compound, which may be either substituted for paint, or be mixed with other pigments, for enlarging their quantity, or reducing their price. The patentee directs the following articles to be pulverized, namely; glass, burnt clay, the slag of glass, copper, iron, or other manufactures; marble, spar, flint, or similar

vitrefiable or calcareous earths. The powders, thus obtained, may be employed as a paint with the liquids commonly used in mixing colours; or they may be immediately incorporated with any kind of paint.

M. DARCY has found, that the succeeding ingredients and proportions form an excellent *white* paint, that may be generally substituted for *oil-paint*, without producing any

any of its numerous inconveniences :

	<i>Avoirdupois.</i>
The curds of milk, well drained - - -	5 oz.
Slacked lime - - -	$\frac{1}{4}$ oz.
Whiting - - -	10 oz.
Fine pulverized charcoal	1 dram.
Water - - -	3 oz.

The following preparation, however, appears to be more simple, and is equally efficacious : it was first published in the "*Bibliothèque Physico-economique*," for 1792, by M. LÜDICKÉ ; who has employed it with great success for painting ceilings, gates, doors, and even furniture. He directs fresh curds to be bruised in an earthen pan, or in a mortar ; after which they must be mixed with an equal portion of slacked lime : the result will be a white fluid, that may be applied with as much facility as varnish ; but it will be necessary to employ such mixture on the same day, as it dries very speedily, and is apt to become too thick, if it be kept 24 hours.—He observes that Armenian bole, ochre, and all pigments that are miscible with lime, may be incorporated in various proportions, according to the colour to be communicated ; but some caution is necessary, in making such addition, to use the smallest possible quantity of water ; as the painting will otherwise be less durable.

When two coats of this paint have been applied, it may be polished with a piece of woollen cloth, or other proper substance ; in consequence of which, it will become as bright as any varnish : and, if the ceiling, &c. be exposed to moisture, it should be coated with the whites of eggs ; by which expedient it will become as durable as oil-painting. The principal ad-

vantages, derived from the use of this substitute, consist in its cheapness, and the facility with which the two coats may be applied, and polished ; one day being sufficient for both operations. Hence, it deserves the attention of those whose lungs cannot support the disagreeable smell arising from oil-paint ; and who are not disposed to encourage the extravagant charges of house-painters.

PARSNEP.—This fibrous root possessing a peculiar sweetness, Prof. HERMSTADT was induced to make various experiments, with the view of extracting sugar. He caused a parcel of such roots, weighing 24lbs. to be pounded in a stone mortar, with the addition of a little cold water ; after which the juice was expressed, the residuum washed in pure water, and likewise submitted to the action of a press : the result was a turbid, sweet liquor. After standing in a cool place for a few days, till it became clear, and evaporating it over a moderate fire, Prof. H. obtained $5\frac{1}{2}$ lbs. of an agreeable syrup.

PEAT.—In the 19th vol. of the "*Transactions of the Society for the Encouragement of Arts*," &c. we meet with a description of an implement contrived by THOMAS ECCLESTON, Esq. of Scarsbrick-hall, Lancashire. It is denominated a *Peat-borer*, and is designed for draining boggy land : as its application has been attended with uncommon success, we have given an engraved figure representing its construction.

Description of Mr. ECCLESTON'S Peat-borer.

(Fig. 4. Plate I. Supplement).

A, is the cutter of the borer, which penetrates the peat.

B, is

B, is the body of the borer, six inches in diameter.

C, the aperture, through which the peat, introduced by boring, is extracted from the ground.

D, represents a portion of the iron bar of the borer; to the upper part of which a cross handle is to be affixed.

It frequently happens, that the bottoms of drains and ditches, when newly cut, rise so considerably from the pressure of the subjacent waters, as to be nearly filled up, and consequently to impede the course of that fluid which they were intended to carry off; so that the work is rendered ineffectual. To prevent such accidents, recourse is generally had to a common auger, or even to a pole, which procures a temporary passage for the water; but, the peat being thus pressed only in a lateral direction, *without being cut*, the sides speedily close; and the course of the fluid again becomes obstructed. Mr. ECCLESTON'S implement, therefore, is calculated to remove such impediment; for, by means of his auger, a cylindrical column of peat, six inches in diameter, will be completely cut out and removed; thus affording a free passage to the confined water, for a considerable length of time. Hence, the expence of draining boggy lands may be considerably reduced; and they will eventually be rendered so firm, that the first drains will stand unimpaired.

The proper depth, to which the peat-borer should descend, must be regulated by the situation of the soil:—where moss-lands are very low, and liable to be inundated, it will be advisable to penetrate only to such a depth as will be sufficient to drain the surface; because deep boring would cause it to sink

so low, as to be overflowed by every sudden shower of rain.

PICHURIM BEANS are the fruit of the *Faba Pichurim*, a native of South America; and of which there are two varieties, known under the names of the Greater and Lesser Pichurim Beans. The pods of the latter contain a gross oil, which is obtained by bruising and submitting them to the action of a press. The former, when reduced to powder, yield an essential oil by distillation.

These beans possess considerable astringent properties, and were formerly employed, in doses of ten grains reduced to powder, in diarrhoeas and dysenteries.

PLANTS.—A simple method of conveying shrubs, and young trees, from distant climates, has lately been published by M. CHARPENTIER DE CAUSSIGNY. He directs a box to be provided, of a sufficient capacity, according to the number of plants intended for transportation. Some light earth, moderately moistened, is then to be spread at the bottom, to the thickness of fifteen lines, or from one to two inches. The young trees should now be taken out of the ground, together with their roots, and the soil adhering to them: after cutting off the extremities of the roots, and also of such branches as are in a growing state, they must be carefully placed between two strata of earth; when the box should be closed. As the plants are apt to become dry during the voyage, in consequence of which their vegetative principle would be endangered, it will be necessary to perforate the lid of the box with several holes, through which they may occasionally be supplied with water; and then be closed with wooden pegs, in order to

to secure the plants from the effects of cold and moisture. This method has been successfully practised by M. de C. with the most delicate shrubs, which uniformly prospered, after having lain several months in close boxes.

PLANT-LOUSE.—These vermin are very detrimental to trees, by devouring both their foliage and fruit: hence, they ought to be exterminated at an early period of their existence.—Mr. FORSYTH recommends two parts of fine wood-ashes to be mixed with one part of unslacked lime, reduced to powder; which must be thrown on the *under-side* of the leaves infested with the insects, by means of a common *dredging-box*, till they are completely covered. This mixture should be applied early in the morning, before the dew is evaporated, that the powder may adhere more firmly; and which must farther be suffered to remain on the leaves, for three or four days.

Unslacked lime is then to be incorporated with soft water, in the proportion of half a peck to 32 gallons; and the mixture stirred two or three times in 24 hours, for three or four successive days. After the lime has subsided, the trees must be copiously watered with this liquid; care being taken to throw a considerable part of it on the lower side of the leaves. The irrigation must be repeated once every day, for a week; a practice by which the plant-lice will be effectually destroyed.

PRIVIES are certain places of retirement, which require no farther definition.—As they frequently emit an odour alike inconvenient and unwholesome, either from neglect in cleansing them, or from

the low situation of the houses to which they may be annexed, such fetor may be destroyed by throwing into them a mixture of lime-water and a ley of ashes, or of soap-suds: thus, the most offensive exhalations may be effectually removed, at a trifling expence. By a similar process, vessels may be kept in the apartments of the sick, where night-chairs cannot be easily procured, without emitting the least offensive smell: for, if 5 or 6lbs. of quick-lime, a small quantity of ashes, and two buckets of water, be thrown into a tub, adapted for the purpose by a proper lid, such composition will effectually prevent any fetid effluvia; and the feculent matter, thus neutralized, becomes an excellent manure.—See also *CLOSE-STOOL*: vol. ii.

PRUNING.—Of this important point of horticulture, we have formerly given an outline which, together with the directions interspersed in the accounts of individual trees, was deemed sufficient for the information of readers, in general. Nevertheless we have, at the request of several correspondents, been induced to add a few supplementary hints, which are chiefly derived from our own experience; because the practical suggestions obtained from the works of Mr. BUCKNALL, and Mr. FORSYTH, have already been communicated in the progress of this work, under a variety of articles, connected either with particular trees, or with different subjects relative to orcharding.

The proper age, and season, for *pruning fruit-trees*, is of the first consequence; as we seldom meet with an orchard which, in this respect, has been judiciously managed. To ensure success, there is required

required not only the eye of an accurate observer, but also a complete knowledge of the various kinds of fruit-bearing trees, their peculiar nature, and habits; because almost every sort must be treated in a different manner. Many of these commonly produce their fruit on the shoots of the preceding year, such as peaches, nectarines, &c.; others again, on branches which have attained the age of 3, 5, 15, or 20 years; for instance, pears, plums, cherries, &c.—For the proper nursing and training of all these trees, it will be indispensably requisite to attend to this circumstance, that a sufficient portion of *fertile wood* be left in every part: at the same time, it would be prejudicial to the growth and health of a tree, to leave too many useless branches, which only tend to exhaust their nutritive powers, and eventually to accelerate their decay.

On the whole, it deserves to be noticed, that peaches, nectarines, apricots, cherries, and plums, will thrive more vigorously, when they are pruned with a sparing hand; as, otherwise, they are apt to *bleed* profusely, or to part with such a quantity of gum, as will often prove fatal: hence, the safest method is, to remove only the superfluous sprigs as soon as they appear, and not to cut off those new shoots, which may be required to fill up vacant spaces on the wall. By such management, the trees above alluded to, may be preserved in a prosperous condition; and they will grow with greater regularity, and less trouble, than by the common method of clipping them promiscuously.

Apple and pear-trees ought to be treated, during the summer, in a similar manner; but, in the win-

ter, they require a different process. For, as peaches and nectarines bear their fruits mostly on the annual branches, these must be lopped according to the degree of strength observed in the individual tree; so that they may be left in a state sufficiently vigorous to produce new shoots in the succeeding year: on the contrary, pear, apple, plum, and cherry-trees, yielding their fruits on the young sprigs that proceed from boughs of several years growth, they should not be pruned; because branches which naturally abound with these sprouts, would thus increase the wood, but never afford a proportionate addition of fruit.—And, as it frequently happens, that the flower-buds appear first on the extremity of the last year's sprig, such cutting of the branches would deprive the tree of its future blossoms.

With respect to the pruning of high or lofty trees, we shall briefly observe, that their branches ought not to be curtailed or removed, unless they grow too luxuriantly and irregularly on one side of the stem, so as to deprive the collateral boughs of the necessary supply of sap; on account of which, other parts of the tree would remain deficient; or its roots might be too much weakened: in this case, it will be advisable to lop a branch to such extent, as may be deemed requisite for the production of lateral boughs, in order to supply the open or naked sides. These observations, however, apply only to apple and pear-trees, which shoot forth their blossoms from the branchy wood, after it has attained the age of several years: on the contrary, most kinds of *stone fruit* would, after such pruning, part with their gum, and speedily perish.

RAT.

R.

RAT.—A patent was lately granted to Mr. BOSQUET, for his method of preventing the nuisance, and pernicious effects of rats, on ship-board, &c. This important object is to be attained, by filling up the vacant spaces between the planks, lining, and timber of ships, with hot or melted pitch, tempered with a little tar, to render it less brittle, and more tenacious: at the same time, to increase its adhesion and durability, the patentee directs cork-shavings, charcoal-dust, and ox or other animal hair, to be incorporated with the composition. By such contrivance, all rats will not only be effectually repelled, and consequently the destructive effects of these vermin living, breeding, dying, and rotting between the ship's timber, be avoided, but the safety of the vessel will also be ensured: for, in case a plank should start, he asserts, that no water can penetrate through the composition.

The following preparation has also recently been recommended for expelling rats: it consists in mixing the expressed juice of the stalk or leaves of the Deadly Nightshade with wheaten flour, or oatmeal: the paste must be cut in small pieces, which are to be placed in the holes or tracks frequented by these depredators; and, though they will not eat such nauseous food, yet its odour is to them so extremely offensive, that they will speedily quit the premises.

RED INK.—Although we have already (vol. iii. p. 483) inserted two methods of preparing RED INK, yet as it appears from the experiments made by one of our cor-

respondents, that the *second* process, extracted from the last edition of "*Chambers's Encyclopædia*," has not proved successful, we shall add a *third*, on the authority of M. HOCHHEIMER; who positively asserts, that the characters written with the following preparation, had not undergone the least change, but retained their lively red hue, during a period of ten years.

"Take of the best Brazil-wood, 4 oz.; pulverized alum, and purified crystals of tartar, of each 1 oz. Boil these substances together (we believe, most properly, in a well tinned vessel), with two pints of filtered river-water, till one half of the fluid be evaporated. While the liquor is warm, add the best, white gum-arabic, and double refined sugar, of each one oz."—M. HOCHHEIMER remarks, that the acid of tartar is the most essential ingredient in this ink, and tends to preserve its beautiful red colour; though we confess, that want of leisure has not permitted us to repeat the experiment.

ROPE.—A method of making ropes more durable, than may be effected on the usual plan, has lately been discovered at Würtemberg. It consists simply in combining the threads in a parallel direction; and experiments have demonstrated, that such a rope, woven of 504 threads worked together, will support 13 cwt. without breaking. This contexture being three, 3-16th inches in diameter, and 111 feet in length, did not exceed 19 lbs. in weight; while a common rope of similar dimensions weighed 31½ lbs.

RUST.—In addition to the hints given in the articles IRON, STEEL, and

and likewise p. 434 of this Supplement, for preserving those metals from the injurious effects of rust, we think it useful to add the following :

As experience proves, that the application of common oil, as well as that of paint, is but an imperfect security against the corrosive effects of air and moisture, we are informed, that articles manufactured of iron are not liable to be attacked by the rust, if this metal be previously poured into melted lead ; then suffered gradually to cool ; and this simple process be repeated several times.

Another mode of coating iron, with a view to prevent the formation of rust, is said to be obtained by the application of spermaceti, while the metal is hot : thus, a kind of bronze will be the result.— A more permanent varnish, however, is that of rubbing iron in a state nearly red-hot, with the horny hoofs of cattle, which are previously dipped in a small portion of oil : this process is asserted to afford the best defence from the destructive influence of air and humidity.

S.

SCARBOROUGH WATER is obtained from two mineral springs which rise about a quarter of a mile from that town, in Yorkshire. One is a simple chalybeate water, similar to that of Tunbridge ; while the other, which is chiefly frequented, contains, in addition to the iron, a considerable portion of purgative salt.

The Scarborough-water may be advantageously used, in the various complaints for which that of Cheltenham is recommended : the former is, however, chiefly employed as an alterative ; because few stomachs can support the large doses which are required to be taken, for producing a proper evacuation from the bowels.

SEA-PLANTAIN, or *Plantago maritima*, L. is an indigenous perennial, growing on the sea-coast, where it flowers in June or July.— This plant, when reduced to ashes, affords a considerable quantity of mineral alkali ; which may be advantageously substituted for the *Barilla*, imported from Spain.

SLUGS, frequently harbour near the foundation of walls, and at the roots of pease, beans, lettuces, &c. where they commit great depredations. Mr. FORTYTH, therefore, directs them to be picked off, and thrown into a vessel containing a little unslacked lime, which will inevitably destroy them : or, the ground infested by these vermin should be watered with a liquid, composed of soap-suds, urine, and a decoction of tobacco.

If slugs be uncommonly numerous on the surface of the ground, particularly in dewy mornings, or after rain, Mr. F. recommends fine unslacked lime to be scattered over the borders of the gardens, thus infested. He prefers, however, the preparation first mentioned ; as it not only destroys the insects, but also prevents their increase, by killing their eggs, which are uniformly deposited in the earth.

SPICE.— Beside the utility of the *Monarda*, or Oswego-tea, as a substitute for spice, its leaves may be advantageously used instead of those

those of the **TEA-TREE**: the flowers also, when infused in brandy, impart to it an agreeable flavour, resembling that of peaches.

SPIDER, the RED.—Independently of the method of exterminating these vermin, already suggested, the following is recommended by Mr. **FORSYTH**. It merely consists in irrigating the infested plants with lime-water, in the afternoon, particularly on the lower side of the leaves. In hot-houses, however, he advises a *barrow-engine* to be filled with soft water, and all the plants to be sprinkled, by directing the stream against the top-lights, and shelves, till the water be an inch deep in the paths. But, where the building will not admit of the entrance of a barrow-engine, the front or top-lights must be slid down, and the water poured in, from above. When this affusion is commenced, if in the inside, every light ought to be shut; but, if the fluid be introduced from without, one light only should be opened at a time; and which must be shut, as soon as the part opposite to it is sufficiently watered. The other lights are then to be successively removed; and, when the irrigation is completed, the house should be carefully closed till the next morning.

In consequence of this operation, vapours will arise in every part of the building; cover all the plants; and effectually destroy the red spider, together with all other vermin. Mr. F. farther observes, that the watering must be repeated every day, during hot weather; and that it will, in general, shorten the labour, which would otherwise be required in irrigating plants. Such vegetables, however, as require copious humidity, ought to be watered previously to sprinkling

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the house: thus, the plants will imbibe all the moisture, and the paths will become perfectly dry, during the night.

STOVE.—An useful contrivance of this nature, calculated for *Laundries*, is manufactured by Messrs. **JACKSON** and **MOSER**, of Dean-street, Soho; whose patent is now expired. Their stoves differ little from those generally employed for warming apartments, except that the smoke is conveyed into a vent by one pipe; over which a retort is fixed. At the bottom, on both sides, there is a bar, on which irons may be heated; so that, when the stove is raised on brick-work, and becomes thoroughly hot, it communicates heat to the room, and thus contributes to dry the linen; while a considerable saving is obtained in the article of **FUEL**.

STRANGURY, in farriery, is an obstruction of urine, that is sometimes occasioned by an accumulation of feces pressing on the neck of the bladder; in which case the treatment, stated under the article **GRIPES**, may be advantageously adopted.

Should this disease arise from an inflammation of the parts, it will be necessary to bleed the animal in proportion to the urgency of symptoms; after which, Mr. **TAPLIN** advises the following clyster to be injected, namely:—Take 3 pints of gruel, 2 oz. of nitre, 1½ oz. of gum-arabic, and 4 oz. of olive-oil: let them be injected of a moderate warmth, and be retained in the body as long as possible. This remedy must be succeeded by a warm mash, consisting of 2 parts of malt, and one of bran; but, in case the animal should not stale, the following balls may be administered, viz. Let 10 drams of Castile soap; 1 oz. of

G g

sal-

sal-prunella; 2 drams of camphor; 6 drams of pulverized aniseed; and $1\frac{1}{2}$ dram of oil of juniper, be mixed with a sufficient quantity of syrup of marsh-mallows: these ingredients ought to be divided into two balls, one of which should be given six hours after the other; and, if this first course does not produce the desired effect, the same dose must be repeated every 4 hours, till an evacuation be procured.

These balls are stated to be safe, mild, and efficacious; but, if a liquid form be preferred, Mr. TAPLIN recommends the following drink to be given, at similar intervals.—Let 2 oz. of bruised juniper-berries be boiled in $1\frac{1}{2}$ pint of water, till one half be evaporated; when the berries should be pressed; and, after straining the liquor, one ounce of both, nitre, and gum-arabic, reduced to powder, are to be incorporated with the draught.

Another cause of strangury is an ulceration of the parts; which may be discovered by the animal's uneasiness; and by an irregular discharge of the urine, that assumes a turbid appearance, being sometimes tinged with blood, and occasionally impregnated with membranous matter. In this case, Mr. TAPLIN directs the following ball, or drink, as the only probable means of procuring relief.—Let 1 oz. of myrrh;

3 oz. of Castile soap, and a similar portion of LOCATELLI's balsam; pulverized aniseed and nitre, of each 2 oz.; and 6 drams of the balsam of Peru; be mixed with the syrup of marsh-mallows, and divided into 6 balls; one of which must be swallowed every morning.—Or, $\frac{1}{2}$ of a pint of gruel may be mixed with 3 drams of laudanum, and 1 oz. of pulverized gum-arabic, to which 1 oz. of nitre, reduced to powder, should be added.

A spasm of the parts also produces strangury: where this affection is suspected, the following balls should be given, and repeated as often as occasion may require. Mix $\frac{1}{2}$ an oz. of Castile soap, 2 drams of nitre, similar quantities of resin, and of the compound powder of tragacanth, with 10 grains of opium, and 30 drops of juniper-oil.

Lastly, strangury is sometimes occasioned by a paralytic affection of the kidneys, in consequence of which, these organs cannot secrete the urine, and a total suppression ensues. The disease being internal, it can seldom be discovered at so early a period as to admit of efficacious remedies: the animal dies in a few days; its body being uncommonly swelled, and covered with blotches.

T.

TAMARISK, the FRENCH, or *Tamarix Gallica*, L. is an indigenous bushy shrub, which grows chiefly on the southern coasts of Britain; where its beautiful white flowers appear in July.—This marine vegetable is peculiarly valuable

for the mineral alkali it affords, when reduced to ashes, and which may serve as an excellent substitute for Spanish *Barilla*.—BACHSTEIN remarks, that in the southern parts of Europe the French Tamarisk attains the height of a middle-

middle-sized tree; and, as its fine leaves resemble those of the cypress, it is often cultivated in pleasure-grounds. The Germans employ it with advantage in the process of tanning; but the ashes procured from it contain a true Glauber's salt, an earthy sea-salt, and vitriolated tartar. In the salt-petre works on the Continent, the same ashes are employed for clarifying the *mother-ley*.

There is another species of this shrub, the GERMAN TAMARISK, a native of that country; and which deserves to be introduced into Britain: according to SUCKOW, it strikes, with the addition of green vitriol, a beautiful dark-brown dye on wool, and a very bright reddish-brown colour on silk.—Its fruits are used by dyers, as a good substitute for Aleppo-galls.

TANNING.—In November, 1801, a patent was granted to Mr. FRANCIS BREWIN, for an improved method of Tanning. His process consists principally in consolidating floaters and taps, by drawing the oozes for the vats, and handlers from the floaters, &c. But, as this contrivance is by the patentee described in confused, intricate terms, and can be interesting or intelligible only to tanners, we refer the curious reader to the 16th vol. of the "*Repertory of Arts*," &c.

TEETH.—Various remedies have been suggested in this article, for relieving the *tooth-ach*. To these may be added the insect, termed *Lady-bird*, or *Coccinella septem-punctata*, L. which, on rubbing it between the fore-finger and thumb, then applying the former two or three times to the painful tooth, has generally afforded relief. Late'y, also, charcoal has been found of great service, both

as a preventive and cure; for which purposes the cavity of a *carious tooth* should be filled with pulverized carbon: thus, the pain will in a short time be removed.

TULIP-TREE, or *Liriodendron tulipifera*, L. a native of North America, in the temperate climates of which it attains the height of from 60 to 100 feet: in colder regions, it degenerates into a bush.—The wood of this elegant tree, while young, is white; but, at an advanced age, assumes a fine yellow colour. It is equally useful in building light vessels, and as fuel: on account of its quick growth and easy culture, this noble plant deserves to be reared in Britain.—With this view, the ripe seeds should be collected in October, carefully kept in a moist state, covered with leaves; and planted in the succeeding spring; as they require three years to strike proper roots.

TURNIP.—In November, 1801, a patent was granted to Mr. WILLIAM JACKSON, for a machine or drill designed to sow turnips.—By this contrivance, turnip, rape, or similar small round seeds, may be drilled at any requisite distance: it may farther be adapted to the width of any furrow; and, by means of certain ingenious machinery, the seed may be deposited either under such furrow, or upon the ground.—Our limits not permitting us to detail the constituent parts of Mr. JACKSON's drill, we can only state, that his implement unites cheapness with utility, and may be purchased for the small price of 1l. 11s. 6d.: hence we refer the reader to the 16th vol. of the "*Repertory of Arts*," &c. where the specification is illustrated with an engraving.

G g 2

WASP.

W.

WASP.—If any of these insects be accidentally taken in beer, or other liquor, the fatal consequences, resulting from their stings, may be obviated by swallowing a little common salt. Thus, one of our correspondents is acquainted with a recent instance, in which a life was saved by adopting this simple remedy; and he has experienced the efficacy of salt applied externally, as a cure for the stings of wasps, in his own family, for several years.—See also the article *Bee*, p. 397, Suppl.

WASTE LANDS. Having, under various heads, in this work, had opportunities of proving the important national advantages that may be derived from a more general cultivation of the extensive heaths and commons, which lie in a state unbecoming an active and ingenious people, we are induced to avail ourselves of the remarks inserted by a judicious correspondent, in the *Bath Journal*, for January 25th, 1802.

If barren lands are to be cultivated only for the purpose of enlarging the estates of great landowners; if commons are to be inclosed, only with a view to drive away into beggary those cottagers, who lived and supported their little families upon them; if improvements produce no other effect than that of diminishing the number, and swelling the wealth of farmers, and consequently of raising the price of every necessary of life, by forwarding the purposes of monopoly; it were (perhaps), much

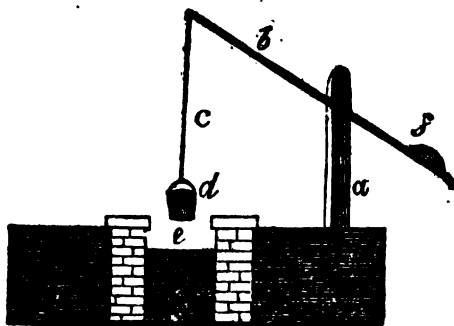
better that things should remain just as they are.—If high cultivation and famine are to go hand in hand, it were better for the country to be placed in its primitive rudeness, where every man could enjoy the fruits of the earth who laboured for them, than that a half-starved multitude should have their eyes dazzled with cultivated fields, and splendid domains, where

“ The country smiles a garden and a grave.”

It is well known, that lands do not, upon the whole, yield so much food, when occupied by large as by small farmers; and the experience of the last two years has proved, that a country may be abounding with provisions, while the prices are kept up so as to place them almost beyond the reach of the industrious poor. If a general inclosure is not followed by a general allotment of small farms, it will produce public mischief, instead of good. If the reclaiming of barren lands shall not tend to restore to their former occupations, those whom the war removed from agricultural labour, the country will be swarmed with vagrants, thieves, and robbers, instead of being blessed with plenty.

WATER.—In this article we have presented the reader with various accounts and delineations of machines, invented with the view of raising water: the following Cut represents one of the most simple contrivances generally adopted in the county of Middlesex.

It



It consists of a strong post, firmly set in the ground, at a small distance from the well, and which is about 8 feet above the surface of the earth, as represented at *a*.—With the top of this post is connected a *baulk*, *b*, that turns on an iron pin;—*c* is a pole, linked to the smaller end of each baulk, and on which the pail *d* is suspended, that swings when empty over the well *e*.

In order to raise water by the apparatus here described, a person lays hold of the pole, which is pulled down till the bucket descend into the well for filling it; when it is again easily lifted upwards by a small force at *c*, being assisted by the weight delineated at *f*.

WATER MILLS.—Although we are, in this country, provided with many contrivances, in which the united powers of water, steam, and mechanical force, have been successfully applied to the purpose of grinding corn into flour, yet we have not, till very lately, met with *floating water mills*, to be worked by tides, or currents; and which are farther designed to put in motion, machinery adapted to any kind of manufacture. — Messrs. POL-

FREEMAN, of Long-acre, in conjunction with Messrs. ALLEN, FOSSENDEN, and GRAY, have purchased the patent-right of Mr. HAWKINS; and have lately completed one of those mills; which, by permission of the Board of Navigation, is stationed between London and Blackfriars Bridge. Such grant was obtained with the laudable view of reducing, if possible, the price of flour in the metropolis, and furnishing a constant supply of that necessary article of subsistence.—The simplicity of this invention renders a long description superfluous; as it consists in merely applying the force of two or three water-wheels on each side of a barge, or any other vessel better calculated to contain the interior part of the machinery. Thus, we venture to pronounce, that the advantages to be derived from this contrivance, must be almost incalculable, both to the metropolis and the kingdom in general (see BREAD, vol. i. p. 333); for, independently of the great expence of steam-engines, there will necessarily result from it, an annual saving of several thousand chaldrons of coal.

WEATHER-GLASS.—In this article, we have alluded to a composition

position suggested by WIEGLEB; and which may serve as a *chemical barometer*. He directs 2 drams of camphor to be pulverized; with purified nitre, and sal ammoniac, half a dram of each. These ingredients are then dissolved in 2 oz. of proof-spirits, in a cylindrical glass; and the orifice is covered with paper, or a thin piece of bladder, perforated with a needle. On placing this vessel in a moderate temperature, all the phenomena formerly stated, will take place according to the changes of the weather.

WHEAT.—In the 2d. vol. of the "*Transactions of the Economical Society of Florence*," &c. M. FABBRONI states, that the farmers of Tuscany divide the seeds of pulse, and particularly of beans, each half of which they plant in the earth, and obtain luxuriant crops. He made an experiment with some grains of corn, which were coarsely pounded, and thrown into a vessel of water; when the particles, containing germs, sank to the bottom. These were sown, and produced plants equal in goodness to those raised from whole grains; many of the former even shooting forth a greater number of stalks.

WINNOW.—Conformably to our promise (p. 339 of this vol.), we have procured an engraving of an improved winnowing machine, manufactured by Messrs. T. and J. POLFREEMAN, of Long-acre, London; who have furnished us with the following account of its construction:

Description of Messrs. T. and J. POLFREEMAN's Improved Winnowing Machine.

Fig. 1.—A, represents a wheel

and strap, serving to turn the fans delineated at 1, **Fig. 2.**

B, is a screw and plate, placed at the end of the hopper, marked 2, **Fig. 2**; the design of which is to regulate the supply of grain.

C, is a *blast*, the force of which may, by means of the Venetian-blind, 5, (**Fig. 2**) be varied, as occasion may require.

Fig. 2.—The frame marked 3, is calculated for the reception of the sieves; where the corn is separated from the chaff, and passes down the screen.—4, is the screen, which works with the machine, and answers every purpose, attained by the screens commonly employed for cleaning corn, after it has been divided from the chaff.

The apparatus here described, requires the attendance of three persons, namely, one to set it in motion; a second to *feed*, or furnish a supply of grain; and a third, to clear away the corn, after it is freed from impurities. With such assistance, it will winnow 5 quarters of wheat per hour, or 6 quarters of barley and oats: it will likewise clean pease, beans, and coffee; so that it cannot fail to be peculiarly useful in the West Indies.

The working of this machine is very simple; so that, with a little practice, any person may understand its various parts, and the sieves proper for the corn to be winnowed.—Lastly, as different kinds of grain vary in quality, the blast should be adjusted accordingly, by means of the Venetian-blind (marked 5, in **Fig. 2**); to which a brass plate is affixed.

WORMS, or EARTH-WORMS.—In the 5th vol. of the "*New Transactions of the Imperial Academy of Sciences at Petersburg*," M. SOCOLOFF, directs 3 parts of fresh quick-

Messrs. T. & T. Polfreeman's improved winnowing Machine.

Fig. 1.

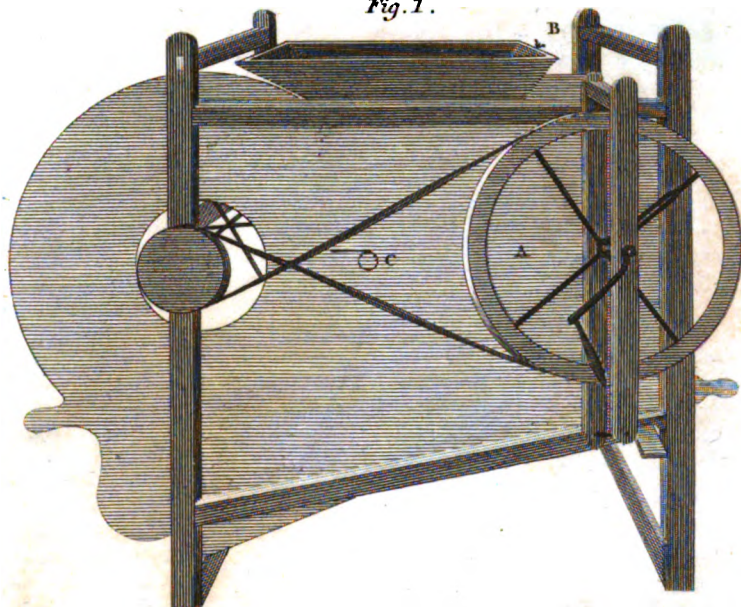
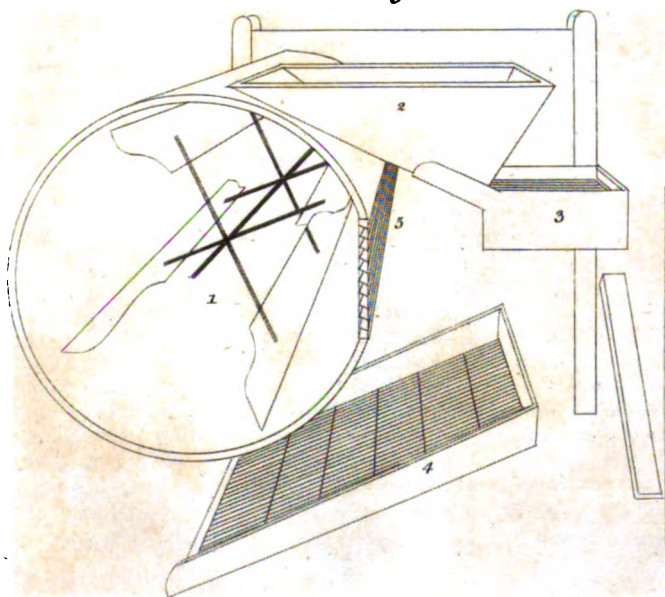


Fig. 2.



Feet 1 2 3 4 5

quick-lime to be mixed with 2 parts of a saturated solution of fixed alkali in water: the result is a highly caustic, milky fluid; which, when poured into the holes frequented by earth-worms, and other

vermin, instantly kills them.—This liquor may also be advantageously sprinkled on trees infested by caterpillars and other insects, which are thus expeditiously destroyed, without injuring vegetation.

Y.

YELLOW.—The **SHAGGY SPUNK**, or *Boletus hirsutus*, a species of Mushroom, has lately been recommended to public attention by M. LASTEYRIE, who has extracted from it a lively and durable yellow dye. This vegetable grows chiefly on walnut and apple-trees: it is replete with colouring matter, that may be expressed by pounding the mushroom in a mortar; after which the liquor, thus obtained, is boiled for about a quarter of an hour. An ounce of the fluid is sufficient to impart tinging matter to 6lbs. of water. When the liquor has been strained, the silk, cotton, &c. intended for dyeing, must be immersed in it, and boiled for about 15 minutes.

M. LASTEYRIE observes, that every kind of stuff retains this colour; though it will be most brilliant on silk; being less bright on linen and cotton. He adds, that if the former, after being dyed, be passed through soft soap-water, it will acquire a bright golden-yellow tinge, equal in point of lustre to that of the silk used for imitating embroidery in gold; and which has hitherto been imported into Europe from China, at a great expence. Lastly, the yellow extracted from this plant, may be usefully employed for painting both in water-colours and in oil.

The increase of Plantations, in soils properly adapted for the purpose, being an object of national importance, we have subjoined a Table; the design of which is, to shew the number of plants that may be set on an acre of land, both according to the Scotch and English admeasurement, at the distance of from one foot to 30 feet from each other.—Thus, the scale from 1 foot to 3 feet gives the number of cabbages, which may be planted on an acre, for the feeding of cattle; while the distance from 3 to 6 feet, determines the amount of young forest or timber-trees, that may be arranged on a similar extent of ground; the space of from 6 to 20 feet, shews those remaining after the first, second, or third cuttings; and the interval from 20 to 30 feet, points out the fruit-trees, which may be planted on one acre.

Another object, which may tend to render the following Table more interesting to the planter, is that of ascertaining the difference between

Gg 4

the

the Scotch and English acres. Hence, the first numbers in the second and fifth columns represent the square feet contained in those respective measures: so that the English acre is to that computed in Scotland, as 43,560 is to 54,760 feet.

Distance. F. I.	Plants on an English Acre.		Distance. F. I.	Plants on a Scotch Acre.	
	Short 100 of 5 score.	Long 100 of 6 score.		Short 100 of 5 score.	Long 100 of 6 score.
1	43,560	36,300	1	54,760	45,633
1 6	19,360	16,133	1 6	24,382	20,318
2	10,990	9,075	2	13,690	11,408
2 6	6,969	5,808	2 6	8,761	7,301
3	4,840	4,033	3	6,084	5,070
3 6	3,556	2,963	3 6	4,470	3,725
4	2,722	2,208	4	3,422	2,852
4 6	2,151	1,792	4 6	2,709	2,257
5	1,742	1,452	5	2,190	1,825
5 6	1,440	1,200	5 6	1,810	1,508
6	1,210	1,008	6	1,521	1,251
6 6	1,031	852	6 6	1,296	1,081
7	889	740	7	1,117	931
7 6	774	620	7 6	973	811
8	680	567	8	855	713
8 6	602	502	8 6	758	631
9	537	448	9	675	562
9 6	482	402	9 6	606	505
10	435	363	10	547	456
11	360	300	11	452	375
12	302	252	12	380	317
13	257	214	13	324	270
14	222	185	14	279	232
15	193	161	15	243	202
16	170	141	16	214	178
17	150	125	17	189	158
18	134	112	18	169	141
19	120	100	19	151	126
20	108		20	137	114
21	98		21	124	103
22	90		22	113	
23	82		23	103	
24	75		24	95	
25	69		25	87	
26	64		26	81	
27	59		27	75	
28	55		28	70	
29	51		29	65	
30	48		30	60	

INDEX

INDEX

To the Latin Names of Plants, Animals, Minerals, Diseases, and other subjects occurring throughout this Work.

ACARUS Asiro, Common Mite;
A. baccarum, Red Spider.

Accipenser Sturio, Sturgeon.

Acer campestre, Common Maple;
A. Pseudo-platanus, Sycamore-tree;
A. saccharinum, Sugar-Maple.

Achillea Millefolium, Common Yarrow;
A. Ptarmica, Sneezewort Yarrow.

Aconitum Napellus, Large Blue Wolf's-bane.

Acorus Calamus, Sweet Flag.

Actæa spicata, Herb Christopher.

Adonis autumnalis, Autumnal Pheasant's Eye.

Adoxa Moschatellina, Tuberous Moschatel.

Aesculus Hippocastanum, Common Horse Chesnut.

Ethusa cynapium, Fool's Parsley;
Æ. Meum, Spignel.

Agaricus, Mushroom;
A. campestris, Champignon;
A. cantharellus, Chanterelle Mushroom;
A. cinnamomeus, Brown Mushroom;
A. clypeatus, Long-stalked Mushroom;
A. muscarius, Fly-killing Mushroom;
A. orcadæ, Meadow Mushroom;
A. Quercinus, Agaric of the Oak;
A. semi-globatus, Semi-globular Mushroom;
A. violaceus, Violet-coloured Mushroom.

Agrimonia Eupatoria, Common Agrimony.

Agrostemma Githago, Corn Cockle.

Agrostis Spica-venti, Silky Bent-grass;
A. stolonifera, Creeping Bent-grass.

Aira aquatica, Water Hair-grass;
A. caryophyllæa, Silver Hair-grass;
A. cespitosa, Turfy Hair-grass;
A. flexuosa, Heath Hair-grass.

Ajuga, Bugle;
A. chamæpithys, Ground Pine;
A. reptans, Common Bugle.

Alauda arvensis, Common Skylark;
A. arborea, Wood-lark.

Alcea rosea, Holly-hock.

Alcedo ispida, Common Kingfisher.

Alchemilla vulgaris, Common Ladies-mantle.

Alisma Plantago, Great Water Plantain.

Allium, Garlic;
A. Ascalonicum, Eschallot;
A. Ceba, Onion;
A. oleraceum, Streaked Field-garlic;
A. porrum, Leek;
A. Schænoprasum, Chive;
A. ursinum, Broad-leaved Garlic.

Aloe Caballina, Fetid, or Horse-aloe;
A. Hepatica, Common, or Barbadoes Aloe;
A. Perfoliata, Socotrine Aloe.

Alopecurus agrestis, Slender Fox-tail-grass;
A. bulbosus, Bulbous Fox-tail-grass;
A. pratensis, Meadow Fox-tail-grass.

Alsine media, Common Chickweed.

Althæa officinalis, Marsh-Mallow.

Alumina, Pure Clay.

Alyssum sativum, Gold of Pleasure.

Amaurosis, Gutta Serena.

Ammo-

- Ammodytes tobianus*, Sand-eel.
Ammonia pura, Caustic Vegetable Alkali.
Amomum, Ginger; *A. Cardamomum majus*, Greater Cardamom; *A. C. minus*, Lesser Cardamom; *A. zinziber*, Common Ginger.
Ampelites, Canal Coal.
Amygdalus, Almond-tree; *A. communis*, Common Almond-tree; *A. Persica*, Peach.
Amylum, Starch.
Amyris gilecadensis, Balm of Gilead Tree.
Anagallis arvensis, Scarlet Pimpernell.
Anarrhicas Lupus, Sea-Wolf.
Anas anser, Goose; *A. a. ferus*, Wild Goose; *A. a. mansuetus*, Tame Goose; *A. boschas*, Duck; *A. creca*, Teal; *A. cygnus ferus*, Wild Swan; *A. c. mansuetus*, Tame Swan; *A. ferina*, Widgeon.
Anchusa semper-virens, Evergreen Alkanet, or Bugloss; *A. officinalis*, Greater Garden Bugloss; *A. lutea*, Yellow Alkanet; *A. tinctoria*, Dyer's Alkanet.
Anemone, Wind-flower; *A. Alpina*, Blue Mountain Anemone; *A. nemorosa*, Wood-Anemone; *A. pratensis*, Dark-flowered, or Meadow Anemone; *A. pulsatilla*, Pasque-flower; *A. ranunculoides*, Yellow Wood-Anemone.
Anethum feniculum, Common Fennel.
Angelica Archangelica, Garden Angelica; *A. sylvestris*, Wild Angelica.
Anguis fragilis, Blind-worm.
Anthemis Cotula, Fetid Chamomile; *A. nobilis*, Common Chamomile; *A. tinctoria*, Ox-eye Chamomile.
Anthericum calyculatum, Marsh Spider-wort.
Antboxanthum odoratum, Sweet-scented Spring-grass.
Antirrhinum, Snap-dragon; *A. Elatrine*, Fluellin; *A. Linaria*, Toad-flax; *A. majus*, Greater Snap-dragon; *A. Orentium*, Calf's snout.
Anthyllis, Kidney-Vetch; *A. vulneraria*, Ladies-finger.
Aphanes arvensis, Parsley-piert.
Apbis, Plant-louse.
Aphtbae, Thrush.
Apis, Bee.
Apium, Parsley; *A. graveolens*, Celery; *A. Petroselinum*, Common Parsley.
Aquilegia vulgaris, Common Columbine.
Arabis thaliana, Common Wall-cress.
Aranea Calycina, Garden Spider; *A. domestica*, Common House Spider.
Arbutus, Strawberry-tree; *A. Alpina*, Mountain Strawberry-tree; *A. Uredo*, Common Strawberry-tree; *A. Uva ursi*, Bear-berries.
Arctium Lappa, Burdock.
Ardea major, Heron; *A. stellaris*, Bittern.
Areca catechu, Fasel-nut; *A. oleacea*, Cabbage Palm.
Arenaria marina, Sea-spurrey Sandwort.
Argilla, Clay; *A. aerata*, aerated Argile; *A. appra*, Porcelain Clay; *A. Lithomarga*, Fuller's Earth.
Aristolochia Clematitis, Slender Birthwort; *A. longa*, Long Birthwort; *A. rotunda*, Round Birthwort.
Arnica montana, German Leopard's-bane.
Arrachis Hypogaios Americanus, Ground-Nuts.
Artemisia, Mugwort; *A. Absinthium*, Common Wormwood; *A. dracunculus*, Tarragon; *A. maritima*.

ma, Sea Wormwood; *A. vulgaris*, Common Mugwort.

Artocarpus, Bread-fruit-tree.

Arum maculatum, Wake Robin.

Arundo, Reed; *A. arenaria*, Matweed; *A. calamagrostis*, Small Reed; *A. epigeios*, Wood Reed; *A. phragmites*, Common Reed.

Asarum Europæum, Asarabacca.

Aspalathus, African Broom.

Asperugo procumbens, Catchweed.

Asperula odorata, Sweet Wood-roof.

Asphodelus luteus, Common Yellow Asphodel; *A. ramosus*, Branching Asphodel.

Asplenium, Spleenwort; *A. scolopendrium*, Hart's-tongue; *A. Trichomanes*, Common Maiden-hair.

Aster Tripolium, Sea Star-wort.

Astragalus, Milk-Vetch; *A. glycyphyllos*, Common Milk-Vetch; *A. Tragacantha*, Tragacanth-tree.

Atriplex hastata, Wild Orache;

A. laciniata, Frosted Orache; *A. littoralis*, Grass Orache; *A. portulacoides*, Shrubby Orache.

Atropa Bella donna, Deadly Nightshade; *A. mandragora*, Mandrake.

Avena, Oat; *A. elatior*, Tall Oat-grass; *A. fatua*, Bearded Wild Oats; *A. flavescens*, Yellow Oat; *A. nuda*, Naked Oat; *A. pratensis*, Meadow Oat; *A. pubescens*, Rough Oat; *A. sativa*, Common Oat; *A. stipiformis*, Skegs.

Balæna mysticetus, Common Whale.

Ballota nigra, Black Horehound.

Barytes, Ponderous Spar.

Bellis perennis, Common Daisy.

Berberis vulgaris, Common Berry.

Beta, Beet; *B. albissima*, Mangel-wurzel; *B. hortensis*, Common White Beet; *B. maritima*, Sea Beet.

Betula, Alder-tree; *B. alba*, Common Birch; *B. alnus*, Common Alder-tree; *B. lenta*, Canada Birch; *B. nana*, Dwarf Alder-tree, *Bidens cernua*, Nodding Marygold.

Blatta orientalis, Eastern Cockroach.

Boletus, Spunk; *B. birsutus*, Shaggy Spunk; *B. igniarius*, Touchwood.

Borago officinalis, Common Borage.

Botrytes, Cauliflower.

Brassica, Cabbage; *B. alpina*, Savoy; *B. campestris*, Field Cabbage; *B. Eruca*, Rocket; *B. Monensis*, Isle-of-Man-Cabbage; *B. muralis*, Wall Cabbage; *B. Napus*, Rape; *B. oleracea*, Sea-colewort, *B. rapa*, Turnip.

Brixa media, Common Quaking Grass.

Bromelia ananas, Common Pine-apple.

Bromus mollis, Soft Brome-grass; *B. pinnatus*, Spiked Heath Brome-grass; *B. Secalinus*, Smooth Rye Brome-grass.

Bryonia alba, White Bryony.

Bubon gummiferum, Gum-bearing Macedonian Parsley.

Bunium bulbo-castanum, Great Earth-nut; *B. flexuosum*, Common Earth-nut.

Buxus angustifolia, Narrow-leaved Box; *B. semper-virens*, Common Box; *B. suffruticosa*, Dutch Box.

Byssus candelaris, Yellow Powder-wort.

Cacalia suaveolens, Alpine Colt's-foot.

Cactus cochenillifer, Indian fig-tree.

Cadmia Fossilis, Calamine.

Callitriche autumnalis, Autumnal Star-grass; *C. verna*, Vernal Star-grass.

Caltha

- Calthapalastris*, Marsh-marigold.
Cambogia gutta, Gamboge-tree.
Campanula glomerata, Clustered Bell-flower; *C. latifolia*, Giant Bell-flower; *C. rapunculoides*, Creeping Bell-flower; *C. rapunculus*, Rampion Bell-flower; *C. rotundifolia*, Round-leaved Bell-flower.
Cancer, Lobster; *C. crangon*, Shrimp; *C. grammurus*, Common Lobster; *C. major*, Common Crab; *C. squilla*, White Shrimp.
Canis, Dog; *C. avicularius*, Spaniel; *C. Graculus*, Greyhound; *C. sanguinaris*, Blood-hound; *C. terrier*, Terrier; *C. villaticus*, Mastiff; *C. vulpes*, Fox.
Cannabis sativa, Common Hemp.
Cantharides, Spanish Fly.
Capparis spinosa, Common Caper.
Capra Hircus, Common Goat.
Cardamine pratensis, Common Ladies-Smock.
Cardialgia, Heart-burn.
Cardium, Cockle.
Carduus acanthoides, Dwarf Thistle; *C. Benedictus*, Blessed Thistle; *C. lanceolatus*, Spear-Thistle; *C. marianus*, Milk-Thistle; *C. tomentosus*, Woolly-headed Thistle.
Carex acuta, Slender-spiked Seg; *C. arenaria*, Sea-Seg; *C. vulpina*, Great Seg.
Carlina vulgaris, Common Card-thistle.
Carpinus Betulus, Common Hornbeam-tree.
Carthamus tinctorius, Common Safflower.
Carrum carni, Common Caraway.
Caryophyllus aromaticus, Clove-tree.
Cassia, Cassia; *C. fistula*, Purg-ing Cassia; *C. Senna*, Senna.
Castor, Beaver; *C. fiber*, Common Beaver; *C. moschatum*, Water-rat; *C. zibethicus*, Musk-rat.
Cavia cobaya, Guinea Pig.
Centunculus minimus, Bastard Pimpernell.
Cephalalgia, Head-ach.
Cerussa, White Lead.
Cervus Deer; *C. Dama*, Fallow Deer; *C. Elaphus*, Stag.
Cheerophyllum sylvestre, Wild Chervil; *C. temulentum*, Rough Chervil.
Chenadrius Pluvialis, Common Plover.
Chelidonium, Horned Poppy; *C. corniculatum*, Red Horned Poppy; *C. majus*, Greater Celandine.
Chenopodium, Goose-foot; *C. album*, White Goose-foot; *C. Bonum*, Perennial Goose-foot; *C. maritimum*, Sea Goose-foot; *C. olidum*, Stinking Goose-foot; *C. polyspermum*, Upright Blite.
Chlorosis, Green Sickness.
Chrysomela saltatoria, Turnip-fly.
Cicada, Flea-locust.
Ciccorium, Succory; *C. Endivia*, Endive; *C. Intybus*, Wild Succory.
Cicuta virosa, Long-leaved Water Hemlock.
Cinchona, Peruvian Bark-tree; *C. Brachycarpa*, Dwarf Bark-tree; *C. Caribaea*, Jamaica Bark-tree; *C. Floribunda*, St. Lucia Bark-tree; *C. officinalis*, Peruvian Bark-tree; *C. Triflora*, Triple-flowered Bark-tree.
Cistus creticus, Cretan Rock-Rose.
Citrus, Citron; *C. Aurantium*, Orange; *C. Decumana*, Giant Citron; *C. Lima*, Lemon-tree; *C. Medica*, Citron-tree.
Clematis Vitalba, Traveller's Joy.
Clupea, Herring; *C. alosa*, Shad; *C. encrasicolus*, Anchovy; *C. harengus*, Herring; *C. sprattus*, Sprat.
Coccinella septempunctata, Lady-bird.

Coccus

Coccus Cacti, Cochineal Insect; *C. Hesperidum*, Green-house Bug; *C. Illicis*, Kermes; *C. Lacca*, Gum-lac-insect; *C. malorum*, Apple-tree Coccus; *C. Phalaridis*, Canary-grass Coccus; *C. Polonicus*, Scarlet grain of Poland.

Cochlearia, Scurvy-grass; *C. Anglica*, English Scurvy-grass; *C. Armoracia*, Horse-radish; *C. Coronopus*, Common Wort-cress; *C. officinalis*, Common Scurvy-grass.

Cocos, Cocoa.

Coffea, Coffee-tree.

Colchicum autumnale, Meadow Saffron.

Coluber Berus, Common British Viper; *C. natrix*, Common Snake.

Columba ænas, Domestic Pigeon.

Comarum palustre, Purple Marshlocks.

Conium maculatum, Common Hemlock.

Convallaria, Solomon's Seal; *C. Majalis*, Lily of the Valley; *C. multiflora*, Common Solomon's Seal; *C. Polygonatum*, Sweet-smelling Solomon's Seal.

Convolvulus, Bindweed; *C. arvensis*, Small Bindweed; *C. Jalappa*, Jalap; *C. Scammonia*, Syrian Bindweed; *C. scoparius*, Bushy Bindweed; *C. sepium*, Great Bindweed; *C. soldanella*, Sea Bindweed; *C. Turpetum*, Turbith.

Coryza squarrosa, Flea-bane.

Copaifera Balsamum, Balsam of Copaiba-tree.

Corallina, Coral.

Coriandrum sativum, Common Coriander.

Cornus sanguinea, Wild Cornel-tree; *C. suecica*, Dwarf Cornel.

Corvus, Crow; *C. corax*, Raven; *C. corone*, Common Crow; *C. frugilegus*, Rook; *C. glandarius*, Jay; *C. monedula*, Jack-daw; *C. pica*, Mag-pye.

Corylus, Hazel-nut-tree; *C. avellana*, Common Hazel-nut-tree; *C. avellana fructu rotundo maximo*, Pound-nut; *C. Hispanica*, Spanish Hazel-nut-tree; *C. sativa*, Almond-nut; *C. sativa, fructu oblongo rubente maximo*, Blood-nut.

Costae, Ribs.

Crambe, Sea Kale; *C. maritima*, Cliff-Cale.

Crataegus, Hawthorn; *C. Aria*, White-beam Hawthorn; *C. Oxycantha*, White-thorn; *C. torminalis*, Wild Service-tree.

Critbum maritimum, Rock Sapphire.

Crocus, Saffron; *C. sativus*, Common Saffron; *C. vernus*, Spring, or Garden Crocus.

Crotolaria juncea, Chinese Hemp. *Croton tinctorium*, Dyer's Wild Ricinus.

Cucubalus Behen, Spatling Poppy.

Cuculus canorus, Common Cuckow.

Cucumis, Cucumber; *C. Anguria*, Water Melon; *C. Colocynthus*, Coliquintida; *C. melo*, Common Melon; *C. sativa*, Common Cucumber.

Cucurbita, Gourd; *C. lagenaria*, Bottle Gourd; *C. lignosa*, Ligneous-shelled Gourd; *C. Melo-pepo*, Erect Gourd; *C. Pepo*, Pumpkin; *C. verrucosa*, Warted Gourd.

Culex, Gnat.

Cuminum Cyminum, Cummin.

Cupressus semper-virens, Common Cypress-tree.

Curculio granarius, Corn-chaffer.

Curcuma longa, Long-rooted Turmeric; *C. rotunda*, Round-rooted Turmeric.

Cuscuta Epithymum, Lesser Dodder; *C. Europæa*, Greater Dodder.

Cyclamen Europæum, Sow-bread.

Cydonia Lusitanica, Portuguese Quince; *C. maliforma*, Apple Quince; *C. oblonga*, Oblong Quince.

Cynanche.

- Cynanthe parotidea*, Mumps.
Cynara, Artichoke; *C. cardunculus*, Cardoon; *C. scolymus*, Garden Artichoke.
Cynoglossum officinale, Common Great Hound's tongue.
Cynomia, Dog-Ay.
Cynosurus cristatus, Crested Dog's-tail-grass; *C. echinatus*, Rough Dog's-tail-grass.
Cyperus, Cyper-grass; *C. esculentus*, Eatable Cyperus; *C. longus*, Sweet Cyperus; *C. papyrus*, Paper Cyperus; *C. rotundus*, Round Cyperus.
Cyprinus alburnus, Bleak; *C. auratus*, Gold Fish; *C. barbus*, Barbel; *C. brama*, Bream; *C. carpio*, Carp; *C. cephalus*, Chub; *C. luciscus*, Dace; *C. rutilus*, Roach; *C. Tinca*, Tench.
Cystitis, Inflammation of the Bladder.
Cytisus laburnum, Broad-leaved Laburnum.
-
- Dactylis glomerata*, Rough Cock's-foot-grass; *D. stricta*, Smooth Cock's-foot-grass.
Daphne Laureola, Spurge-Laurel; *D. Mezereum*, Mezereon.
Datura Stramonium, Common Thorn-apple.
Daucus Carota, Common Carrot.
Delphinium consolida, Wild Larkspur; *D. Staphisagria*, Staves-acre.
Delphinus phocaena, Dolphin.
Dianthus Armeria, Deptford Pink; *D. Barbatus*, Sweet William; *D. Caryophyllus*, Clove Pink; *D. Cæsius*, Mountain Pink; *D. Deltoideus*, Maiden Pink; *D. Prolifer*, Proliferous Pink.
Diſſamnus Fraxinella, White Dittany.
Digitalis purpurea, Purple Fox-glove.
Dioscorea bulbifera, Yam.
- Dipsacus fullonum*, Manured Teasel.
Dolichos pruriens, Couhage.
Doronicum Pardalianches, Great Leopard's-bane.
Draba verna, Common Whitlow-grass.
Dracæna Draco, Common Dragon-tree.
Drosera rotundifolia, Round-leaved Sun-dew.
Dyspepsia, Indigestion.
-
- Echinum vulgare*, Common Viper's Bugloss.
Elymus arenarius, Upright Sea Lime-grass.
Emberiza citrinella, Yellow-hammer; *E. hortulana*, Ottolan.
Empetrum nigrum, Berry-bearing Heath.
Enteritis, Inflammation of the Bowels.
Epidendron Neſſarium, Vanilla.
Epilobium angustifolium, Rosebay Willow-herb; *E. hirsutum*, Great Hairy Willow-herb.
Equisetum arvenſe, Common Horse-tail; *E. hyemale*, Rough Horse-tail; *E. paluſtre*, Marsh Horse-tail; *E. ſylvaticum*, Wood Horse-tail.
Equus caballus, Common Horſe; *E. Mulus*, Mule.
Erica vulgaris, Common Heath.
Erigeron Canaſenſe, Canada Fleabane.
Eriophorum, Cotton-grass; *E. anguſtifoſium*, Common Cotton-grass; *E. polyſtachion*, Broad-leaved Cotton-grass; *E. vaginatum*, Hare's-tail Ruſh.
Eruca aquatica, Water Caterpillar; *E. ſylveſtris*, Wood Caterpillar.
Erum hirsutum, Corn Vetch; *E. Lens*, Lentil.

Ery-

Eryngium campestre, Field Eryngo;
E. maritimum, Sea Eryngo.

Erysimum, Hedge-Mustard; *E. Alliaria*, Garlic Hedge-Mustard;
E. Barbarea, Winter-creases; *E. cheirantoides*, Treacle Hedge-Mustard;
E. officinale, Common Hedge-Mustard.

Erysipelas, Rose.

Erysiphile, Mildew.

Esox Lucius, Pike.

Evonymus Europæus, Common Spindle-tree.

Eupatorium Cannabinum, Hemp Agrimony.

Euphorbia characias, Red Spurge;
E. Cyprissias, Cyprus Spurge; *E. helioscopia*, Wart-wort.

Euphrasia officinalis, Eye-bright.

Faba Picburim, Pichurim Beans.

Fagus, Beech-tree; *F. Americana*, American Chesnut-tree; *F. Castanea*, Chesnut-tree; *F. pumila*, Dwarf Chesnut-tree; *F. sylvatica*, Common Beech-tree.

Falco, Eagle; *F. æruginosus*, Moor Buzzard; *F. Buteo*, Buzzard;
F. chrysaetos, Golden Eagle; *F. Cyaneus*, Hen-harrier; *F. Gyr-falco*, Jer-Falcon; *F. milvus*, Kite; *F. nisus*, Common Hawk.

Farina fecundans, Pollen.

Fasciola hepatica, Flewk-worm.

Felis Catus, Cat.

Ferula Asafœtida, asafœtida.

Festuca duriuscula, Hard Fescue-grass; *F. elatior*, Tall Fescue-grass; *F. fluitans*, Flote Fescue-grass; *F. myurus*, Wall Fescue-grass;
F. ovina, Sheep's Fescue-grass; *F. pratensis*, Meadow Fescue-grass;
F. rubra, Creeping Fescue-grass.

Ficus carica, Common Fig-tree.

Flos, Flower.

Fluxus umbilicus, Flux, or Sap-flow.

Fontinalis antipyretica, Greater Water-Moss.

Forficula auricularis, Ear-wig.

Formica, Ant.

Fragaria, Strawberry.

Fraxinus excelsior, Common Ash.

Fringilla, Finch; *F. caelebs*, Chaffinch; *F. canaria*, Canary-bird;
F. carduelis, Gold-finch; *F. domestica*, Sparrow; *F. linota*, Linnet;
F. spinus, Siskin.

Fucus ciliatus, Fringed Seawrack; *F. esculentus*, Esculent Seawrack; *F. palmatus*, Palmated Seawrack; *F. pinnatifidus*, Sweet Seawrack; *F. serratus*, Serrated Seawrack.

Fumaria officinalis, Common Fumitory; *F. solida*, Solid or Bulbous Fumitory.

Gadus eglestinus, Haddock; *G. merlangus*, Whiting; *G. morhua*, Cod.

Galanthus nivalis, Snow-drop.
Galeobdolon luteum, Weasel-snout.

Galeopsis Tetrabit, Common Nettle-hemp.

Galium, Goose-grass; *G. aparine*, Cleavers; *G. Boreale*, Cross-leaved Goose-grass; *G. verum*, Cheese-Rennet.

Gasterosteus aculeatus, Common Stickle-back.

Gastritis, Inflammation of the Stomach.

Genista anglica, Needle-furze; *G. tinctoria*, Dyers' Green-weed.

Geniana lutea, Common Gentian.

Geranium, Crane's-bill; *G. Robertianum*, Herb-Robert.

Gerum urbanum, Common Avena.

Gladiolus communis, Common Corn-flag.

Glaucium Phœnicium, Red Horned Poppy.

Glaux

- Glaux maritima*, Black Saltwort.
Glechoma Hederacea, Ground Ivy.
Glossitis, Inflammation of the Tongue.
Glycyrrhiza glabra, Common Licquorice.
Gnaphalium Arenarium, Sandy Cudweed; *G. Dioicum*, Mountain Cudweed; *G. Germanicum*, Common Cudweed.
Gossypium, Cotton-tree.
Gryllus, Cricket; *G. domesticus*, Common Cricket; *G. Gryllo-talpa*, Mole-cricket; *G. Locusta*, Locust.
-
- Hæmatoxylum Campechianum*, Logwood.
Hedera Helix, Common Ivy.
Hedysarum Onobrychis, Common Saintfoin.
Helianthus annuus, Common Sun-flower; *H. tuberosus*, Tuberous Sun-flower.
Heliotropium tricoceum, French Turnsol.
Helix hortensis, Common Garden Snail; *H. pomatia*, Red Garden Snail.
Helleborus, Hellebore; *H. fatidus*, Fetid Hellebore.
Hepatitis, Inflammation of the Liver.
Heracleum angustifolium, Narrow-leaved Cow-parsnep; *H. Spheodylum*, Common Cow-parsnep.
Herbarium, Herbal.
Herniaria glabra, Smooth Rupture-wort.
Herpes miliaris, Ring-worm.
Hesperis inodora, Dame-wort.
Hieracium auricola, Narrow-leaved Hawkweed; *H. Pilosella*, Mouse-ear Hawkweed.
Hippobosca equina, Common Horse-fly; *H. ovina*, Sheep-fagg.
Hippoboscæ rhamnoides, Sea Buck-thorn.
-
- Hippuris vulgaris*, Common Mare's-Tail.
Hirundo Geometra, Geometrical Leech; *H. medicinalis*, Medicinal Leech; *H. sanguifuga*, Horse-Leech.
Hirundo rustica, Common Swallow; *H. urbica*, Martin.
Holcus, Soft-grass; *H. avenaceus*, Tall Oat-grass; *H. lanatus*, Meadow Soft-grass; *H. Sorghum*, Guinea Corn.
Hordeum cæleste, Wallachian Barley; *H. distichum*, Summer Barley; *H. distichum nudum*, Large Naked Barley; *H. frutescens*, Bushy Barley; *H. hexastichon*, Six-rowed Barley; *H. maritimum*, Sea-barley; *H. murinum*, Wall Barley; *H. pratense*, Meadow Barley; *H. vulgare*, Common Barley; *H. Zeocriton*, Bearded Barley.
Humulus Lupulus, Common Hop.
Hyacinthus non-scriptus, English Hyacinth.
Hydragyrus, Mercury.
Hydrocephalus, Water in the Head.
Hydrocotyle vulgaris, Marsh Pennywort.
Hysocyamus niger, Common Henbane.
Hypericum perforatum, Perforated St. John's Wort; *H. Androsæmum*, Tutsan.
Hypochondriasis, Hypochondriac Affection.
Hysopus officinalis, Common Hyssop.
Hystrix erinaceus, Common Hedgehog.
-
- Jasione montana*, Sheep's-bit.
Jasminum humile, Dwarf Yellow Jasmine; *J. fruticans*, Shrubby Jasmine; *J. officinale*, Common Jasmine.
Jatropha, Cassada Plant; *J. elastica*,

tica, Caoutchouc ; *J. Manibot*, Cassava.

Itarus, Jaundice.

Ichthyocolla, Isinglass.

Ileus, Iliac Passion.

Ilex Aquifolium, Common Holly-tree.

Impatiens noli-tangere, Balsamine.

Imperatoria Ostruthium, Common Masterwort.

Incubus, Nightmare.

Indigofera tinctoria, Indigo-plant.

Inula Helenium, Common Elecampane.

Iris fatida, Stinking Flower-de-luce ; *I. pseudacorus*, Water Flower-de-luce ; *I. Xiphium*, Bulbous-rooted Flower-de-luce.

Isatis tinctoria, Wild Woad.

Isis nobilis, Red Coral.

Juglans regia, Common Walnut-tree.

Juncus conglomeratus, Round-headed Rush ; *J. effusus*, Common Rush ; *J. squarrosus*, Moss-rush.

Juniperus communis, Common Juniper-tree ; *J. Lyria*, Lycian Juniper-tree ; *J. sabina*, Savin.

Jynx torquilla, Wry-neck.

Kaempferia, Zedoary.

Lacerta agilis, Common Green Lizard.

Lactuca virosa, Wild Lettuce.

Laminum album, White Dead-nettle ; *L. purpureum*, Red Dead-nettle.

Lapis Calaminaris, Calamine.

Lapsana communis, Common Nipple-wort.

Larus, Gull ; *L. parasiticus*, Dung-hunter ; *L. ridibundus*, Peewit.

Lathyrus, Chickling Vetch ; *L. aphaca*, Yellow Vetchling ; *L.*

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latifolius, Broad-leaved Vetchling ; *L. pratensis*, Everlasting Tare ; *L. sylvestris*, Narrow-leaved Everlasting Pea ; *L. tuberosus*, Earth Nut.

Lavandula spica, Lavender-spike.

Lavatera arborea, Tree Mallow.

Laurus, Bay-tree ; *L. aestivalis*, Deciduous Bay ; *L. Benzoë*, Benjamin-tree ; *L. Camphora*, Camphor-tree ; *L. Cassia*, Base Cinnamon ; *L. Cinnamomum*, Cinnamon-tree ; *L. nobilis*, Evergreen Bay ; *L. Persea*, Alligator Pear-tree ; *L. Sassafras*, Sassafras-tree.

Lemna, Duck's-meat.

Leontodon Taraxacum, Common Dandelion.

Leonurus Cardiaca, Common Motherwort.

Lepidium latifolium, Dittander Pepperwort ; *L. ruderale*, Narrow-leaved Pepperwort.

Lepra, Leprosy.

Lepus, Hare ; *L. cuniculus*, Rabbit ; *L. timidus*, Common Hare.

Lethargus, Lethargy.

Lichen, Liverwort ; *L. aphthicus*, Green Ground-Liverwort ; *L. barbatus*, Bearded Liverwort ; *L. calcareus*, Calcareous Liverwort ; *L. calicaris*, Beaked Liverwort ; *L. caninus*, Ash-coloured Ground-Liverwort ; *L. caperatus*, Wrinkled Liverwort ; *L. cocciferus*, Scarlet-bearing Liverwort ; *L. flavus*, Yellow-powder Liverwort ; *L. Islandicus*, Esculent Iceland Liverwort ; *L. omphalodes*, Dark-coloured Dyer's Liverwort ; *L. parvulus*, Craw-fish-eye Lichen ; *L. plicatus*, Official Stringy Liverwort ; *L. pulmonarius*, Lungwort Liverwort ; *L. prunastri*, Common Ragged Hoary Liverwort ; *L. pustulatus*, Spotted Liverwort ; *L. Rocella*, Orchal ; *L. tartareus*, Large

H h

Large Yellow-sauceted Dyer's Liverwort ; *L. vulpinus*, Gold-wiry Lichen.

Lignum-vitæ officinale, Common Guaiacum.

Ligusticum Scoticum, Scottish Lovage.

Ligustrum vulgare, Privet.

Lilium candidum, White Lily ;

L. bulbiferum, Fire Lily.

Limax, Slug.

Linum catharticum, Purging Flax ; *L. usitatissimum*, Common Flax.

Liquid-ambar Styraciflua, Liquid Storax.

Liriodendron Tulipifera, Tulip-tree.

Lithanthrax, Pit-coal.

Lithargyrum, Litharge.

Lithiasis, Stone.

Lithospermum arvense, Corn Gromwell ; *L. officinale*, Common Gromwell.

Lobelia Dortmanna, Water Gladiol.

Lolium, Darnel ; *L. arvense*, White Darnel ; *L. bromoides*, Drank ; *L. perenne*, Red Darnel ; *L. temulentum*, Bearded Darnel.

Lonicera Periclymenum, Common Honey-suckle ; *L. Xylosteum*, Upright Honey-suckle.

Lotus corniculatus, Common Bird's-foot Trefoil.

Loxia pyrrhula, Bullfinch.

Lumbricus, Earth-worm.

Lupinus albus, White Lupine.

Lycoperdon, Puff-ball ; *L. aurantiacum*, Orange-coloured Puff-ball ; *L. Equinum*, Equestrian Puff-ball ; *L. proteus*, Common Puff-ball ; *L. tuber*, Truffle.

Lycopodium clavatum, Common Club-moss ; *L. selago*, Fir-leaved Club-moss.

Lycopus Europæus, Water Horehound.

Lysimachia nummularia, Creeping Loose-strife.

Lythrum hyssopifolium, Hyssop-leaved Loose-strife ; *L. Salicaria*, Purple Loose-strife.

Magnesia alba, Magnesia ; *M. nigra*, Manganese.

Malva crispa, Curled Mallow ; *M. Mauritiana*, Mauritian Mallow ; *M. Peruviana*, Peruvian Mallow ; *M. sylvestris*, Common Mallow.

Mangosera, Mango-tree.

Mania, Madness.

Maranta comosa, Hairy Arrow-root ; *M. galanga*, Galangal.

Marrubium vulgare, Common White Horehound.

Matricaria chamomilla, Chamomile Feverfew ; *M. parthenium*, Common Feverfew.

Medicago, Medick ; *M. falcata*, Yellow Medick ; *M. lupulina*, Trefoil-Medick ; *M. sativa*, Lucern.

Melampyrum arvense, Purple Cow-wheat ; *M. pratense*, Common Yellow Cow-wheat ; *M. Sylvaticum*, Wood Cow-wheat.

Meleagris gallopavo, Turkey.

Melica alissima, Lofly Melic-grass ; *M. ciliata*, Fringed Melic-grass ; *M. carulea*, Purple Melic-grass ; *M. nutans*, Mountain Melic-grass.

Melissa, Balm ; *M. Calamintha*, Calamint ; *M. officinalis*, Common Balm.

Melittis grandiflora, Purple and White Balm ; *M. melissophyllum*, Reddish Bastard-Balm.

Meloe vesicatorius, Oil-beetle.

Menispermum, Moon-seed.

Mentha, Mint ; *M. arvensis*, Corn-mint ; *M. piperita*, Peppermint ; *M. Pulegium*, Penny-royal ; *M. viridis*, Spear-mint.

Ment-

Menyanthes trifoliata, Trefoil
Buck-bean; *M. nymphæoides*, Fringed Buck-bean.

Mercurialis annua, French Mercury; *M. perennis*, Dog's Mercury.

Mespilus, Medlar; *M. Germanica*, Common Medlar-tree; *M. Oxyacantha*, White-thorn.

Mica alba, Pure Mica; *M. colorata martialis*, Coloured Martial Glimmer.

Miliaria, Miliary Fever.

Milium effusum, Millet-grass; *M. panicum*, Common Millet.

Mimosa, Sensitive Plant; *M. acacia*, Acacia; *M. Catechu*; Catechu; *M. Nilotica*, Egyptian Acacia.

Minium, Red-lead.

Mnium fontanum, Fountain Marsh-Moss.

Monarda Zeylonica, Indian Horehound.

Morus nigra, Common Mulberry-tree; *M. tinctoria*, Fustic.

Moschus moschiferus, Musk-bearing Animal.

Motacilla alba, White Wagtail; *M. flava*, Yellow Wagtail; *M. lucinia*, Nightingale; *M. rubecula*, Red-breast; *M. rubetra*, Whin-chat; *M. troglodytes*, Common Wren.

Mugil, Mullet.

Muræna Anguilla, Common Eel; *M. Conger*, Conger Eel.

Mus, Mouse and Rat; *M. arvalis*, Meadow-Mouse; *M. decumanus*, Brown or Water Rat; *M. messorius*, Harvest-Mouse; *M. musculus*, Common Mouse; *M. rattus*, Common or Black Rat; *M. sylvaticus*, Long-tailed Field-Mouse.

Musca, Fly.

Mustela, Otter and Weasel; *M. foïna*, Martin; *M. furo*, Ferret;

M. lutra, Otter; *M. putorius*, Pole-Cat; *M. vulgaris*, Weasel.

Myrica gale, Sweet Gale.

Myristica moschata, Nutmeg-tree.

Myroxylon peruiferum, Balsam of Peru-tree.

Myrtus communis, Common Myrtle.

Mytilus edulis, Eatable Muscle; *M. margaritifera*, Pearl-bearing Muscle.

Narcissus pseudo-narcissus, Daffodil.

Nardus stricta, Small Matweed.

Narthecium ossifragum, Lancashire Asphodel.

Nepeta cataria, Cat-mint.

Nerium anti-dysentericum, Anti-dysenteric Rose-bay; *N. Oleander*, South-sea Rose; *N. tinctorium*, Dyer's Rose-bay.

Nicotiana Tabacum, Tobacco-plant; *N. minor*, English Tobacco.

Nopalleca Indian Fig-tree.

Numida meleagris, Guinea-hen.

Nymphaea alba, White Water-Lily; *N. lutea*, Yellow Water-Lily; *N. Nelumbo*, Lily of the Volga.

Ocimum caryophyllatum maximum, Pink-scented Basil; *O. citriodora*, Citron-flavoured Basil; *O. vulgare*, Common Basil.

Oenanthe crocata, Hemlock-water Dropwort; *O. fistulosa*, Common-water Dropwort.

Oesophagus, Gullet.

Oestrus Bovis, Gad-fly.

Olea Europæa, Common Olive-tree.

Oleum Tartari per deliquium, Liquid Vegetable Alkali.

Oneirodynia activa, Sleep-walking.

Oniscus asellus, Slaters.

Ononis arvensis, Rest Harrow.
H h 2 Oph.

Ophthalmia, Inflammation of the Eye.

Orchis macula, Early Orchis ; *O. morio*, Meadow Orchis.

Origanum vulgare, Common Marjoram.

Ornithogalum luteum, Yellow Star of Bethlehem ; *O. umbellatum*, Common Star of Bethlehem.

Ornithopus perpusillus, Common Bird's-foot.

Oryza sativa, Common Rice.

Orobis, Peaseling ; *O. sylvestris*, Bitter Vetch ; *O. tuberosus*, Heath Pea.

Osmunda regalis, Osmund Royal.

Ostrea, Oyster.

Otis tarda, Bustard.

Otitis, Inflammation of the Ear.

Ovis, Sheep.

Oxalis Acetosella, Common Wood Sorrel.

Panax quinquefolium, Ginseng.

Panicum, Panic ; *P. Crus-Galli*, Loose Panic-grass ; *P. dactylon*, Creeping Panic-grass ; *P. miliaceum*, Millet ; *P. sanguinale*, Cock's-foot Panic-grass ; *P. verticillatum*, Rough Panic-grass ; *P. viride*, Green Panic-grass.

Papaver Album, White Poppy ; *P. Argemone*, Prickly Poppy ; *P. Rhæas*, Red Poppy.

Papilio Brassicæ, Cabbage Butterfly.

Paralysis, Palsy.

Parietaria officinalis, Pellitory of the Wall.

Paris quadrifolia, Herb Paris.

Paruli, Gum-boil.

Pastinaca sativa, Common Wild Parsnep.

Pavo cristatus, Peacock.

Pedicularis palustris, Marsh Lousewort ; *P. sylvatica*, Common Lousewort.

Perca fluviatilis, Common Perch. *Peripneumonia*, Inflammation of the Lungs.

Pestis, Plague.

Petroleum, Fossil Pitch ; *P. asphaltum*, Pure Fossil-pitch ; *P. induratum*, hardened Rock Oil ; *P. montana impura*, Pis-asphaltum.

Petromyzon, Lamprey ; *P. Bronchialis*, Lampern ; *P. fluviatilis*, Lesser Lamprey ; *P. marinus*, Sea Lamprey.

Phalæna, Moth ; *P. Bombyx Mori*, Silk-worm ; *P. Bombyx Neustriae*, Lackey-Moth.

Phalaris, Canary-grass ; *P. arundinacea*, Painted Lady-grass ; *P. canariensis*, Manured Canary-grass.

Phaseolus, Kidney-Bean.

Phasianus Colchicus, Common Pheasant ; *P. Gallus*, Cock and Hen.

Phellandrium aquaticum, Water Hemlock.

Pbleum nodosum, Knotty Timothy-grass ; *P. pratensis*, Common Timothy-grass.

Phoca vitulina, Common Seal.

Phoenix dactylifera, Palm-tree.

Phthisis pulmonalis, Pulmonary Consumption.

Picris echinoides, Common Ox-tongue.

Picus minor, Least-spotted Woodpecker ; *P. viridis*, Green Woodpecker.

Pimpinella, Anise ; *P. magna*, Great Burnet Saxifrage ; *P. Saxifraga*, Common Burnet Saxifrage.

Pinguicula vulgaris, Common Butter-wort.

Pinus, Pine-tree ; *P. Abies*, Spruce-Fir ; *P. Cedrus*, Cedar ; *P. Cembra*, Arvenusly ; *P. Larix*, Larch-tree ; *P. picea*, Yew-leaved Fir ; *P. pinea*, Stone-pine ; *P. pineaster*, Wild-pine ; *P. sylvestris*, Scotch Fir.

Piper,

Piper, Pepper ; *P. Cubeba*, Cubebs ; *P. nigrum*, Black Pepper.

Pistacia, Pistachia ; *P. lentiscus*, Mastich-tree ; *P. terebinthus*, Pistachia-tree.

Pisum maritimum, Sea-Pea ; *P. sativum*, Common Pea.

Plantago Coronopus, Buck's-horn Plantain ; *P. lanceolata*, Ribwort Plantain ; *P. major*, Greater Plantain ; *P. maritima*, Sea Plantain.

Platanus occidentalis, Western Plane-tree ; *P. orientalis*, Eastern Plane-tree.

Pleuritis, Pleurisy.

Pleuronectes æsus, Flounder ; *P. limanda*, Dab ; *P. maximus*, Turbot ; *P. platessa*, Plaise ; *P. solea*, Sole or Sole.

Plumbago, Black Lead.

Plumbago Europæa, European Lead-wort.

Poa annua, Annual Meadow-grass ; *P. aquatica*, Reed Meadow-grass ; *P. compressa*, Flat-stalked Meadow-grass ; *P. maritima*, Sea Meadow-grass ; *P. palustris*, Marsh Meadow-grass ; *P. pratensis*, Smooth-stalked Meadow-grass ; *P. trivialis*, Roughish Meadow-grass.

Podagra, Gout.

Polygala, Milk-wort ; *P. Seneka*, Rattle-snake Root ; *P. vulgaris*, Common Milk-wort.

Polygonum, Snakeweed ; *P. aviculare*, Knot-grass Snakeweed ; *P. Bistorta*, Great Bistort ; *P. Convolvulus*, Climbing Buck-wheat ; *P. Fagopyrum*, Buck-wheat ; *P. hydropiper*, Water-pepper ; *P. tataricum*, Siberian Buck-wheat ; *P. viviparum*, Small Bistort.

Polypodium, Polypody ; *P. Filix-mas*, Male Fern ; *P. Oreopteris*, Heath Polypody ; *P. vulgare*, Common Polypody.

Polytrichum commune, Great Golden Maiden-hair.

Populus alba, White Poplar ; *P. balsamifera*, Carolina Poplar ; *P. fastigata*, Po-Poplar ; *P. nigra*, Black Poplar ; *P. tremula*, Trembling Poplar.

Portulaca oleracea, Common Purslane.

Potamogeton natans, Broad-leaved Pond-weed.

Potentilla, Cinquefoil ; *P. anserina*, Silverweed ; *P. argentea*, Hoary Cinquefoil ; *P. fruticosa*, Shrubby Cinquefoil ; *P. reptans*, Common Cinquefoil.

Poterium Sanguisorba, Upland Burnet.

Primula, Primrose ; *P. Polyanthus*, Polyanthus ; *P. veris*, Cowslip ; *P. vulgaris*, Common Primrose.

Prunella vulgaris, Common self-heal.

Prunus, Plum-tree ; *P. Armeniaca*, Apricot-tree ; *P. Cerasus*, Common White Cherry ; *P. domestica*, Common Plum-tree ; *P. insititia*, Bullace Plum ; *P. Padus*, Bird-cherry ; *P. spinosa*, Sloe-tree.

Psittacus, Parrot.

Psora, Itch.

Pteris aquilina, Female Fern.

Pterocarpus santalinus, Red Sandal Wood.

Pulex, Flea.

Pulmonaria officinalis, Common Lungwort.

Punica granatum, Common Pomegranate-tree ; *P. nana*, Dwarf American Pomegranate.

Pyrus, Apple and Pear-tree ; *P. Aria*, White-beam Hawthorn ; *P. aucuparia*, Quicken-tree ; *P. communis*, Pear-tree ; *P. Cydonia*, Quince-tree ; *P. domestica*, True Service-tree ; *P. hybrida*, Bastard

tard Mountain Ash; *P. mālus*, Crab-tree.

Quassia amara, Bitter Quassia; *Q. Simarouba*, Simarouba.

Quercus, Oak; *Q. Egilops*, Large Prickly cupped Spanish Oak; *Q. cerris*, Smaller Prickly cupped Spanish Oak; *Q. coccifera*, Coccus-bearing Oak; *Q. esculus*, Beach-oak; *Q. Robur*, Common Oak; *Q. suber*, Cork-tree.

Raja, Ray-fish; *R. aspera*, Rough Ray; *R. batia*, Skate; *R. clavata*, Thornback; *R. pastinaca*, Sting Ray; *R. torpedo*, Electric Ray.

Rallus aquaticus, Water-rail; *R. crex*, Land-rail.

Rana, Frog; *R. Bufo*, Toad; *R. esculenta*, Eatable Frog; *R. temporaria*, Common Frog.

Ranula, a swelling on the Tongue.

Ranunculus, Crowfoot; *R. acris*, Butter-cup; *R. aquaticus*, Water Crowfoot; *R. arvensis*, Corn Crowfoot; *R. auricomus*, Sweet Wood Crowfoot; *R. bulbosus*, Bulbous Crowfoot; *R. ficaria*, Pilewort; *R. Flammula*, Lesser Spearwort; *R. lingua*, Greater Spearwort; *R. sceleratus*, Round-leaved Water Crowfoot.

Raphanus, Radish; *R. Raphanistrum*, White-flowered, or Jointed Charlock; *R. sativus*, Common Radish.

Reseda lutea, Base-Rocket; *R. luteola*, Yellow-weed, or Dyer's-weed.

Rhamnus catharticus, Purging Buckthorn; *R. Frangula*, Alder Buckthorn.

Rheum palmatum, Palmated

Rhubarb; *R. rhaponticum*, Common Rhubarb.

Rhinanthus Crista-Galli, Yellow Rattle.

Rhodiola communis, Rosewort, the Yellow.

Rhus Copallinum, Narrow-leaved Sumach; *R. coriaria*, Elm-leaved Sumach; *R. Cotinus*, Yellow Sumach; *R. typhinum*, Virginian Sumach.

Ribes Alpinum, Sweet Mountain-Currant; *R. grossularia*, Rough Gooseberry; *R. nigrum*, Black Gooseberry; *R. reclinatum*, Red Gooseberry; *R. Rubrum*, Common Red Currant; *R. uva-crispa*, Smooth Goose-berry.

Ricinus communis, Castor-nut. *Robinia pseudo-acacia*, Acacia, the False.

Rosa arvensis, White-flowered Dog-rose; *R. canina*, Dog-rose; *R. centifolia*, Hundred-leaved Rose; *R. Gallica*, French Rose; *R. mus-di*, Rose of the World; *R. Rubiginosa*, Sweet Briar; *R. Spinossissima*, Burnet Rose; *R. villosa*, Apple-Rose.

Rosmarinus officinalis, Rosemary; *R. o. angustifolia*, Narrow-leaved Rosemary; *R. o. latifolia*, Broad-leaved Rosemary.

Rubeola, Measles.

Rubia tinctorium, Wild Madder.

Rubigo, Rust.

Rubus arcticus, Dwarf Crimson Bramble; *R. cæsius*, Dew-berry Bush; *R. chamæmorus*, Cloud-berry; *R. corylifolius*, Hazel-leaved Bramble; *R. fruticosus*, Common Bramble; *R. Idæus*, Raspberry; *R. occidentalis*, Virginian Raspberry Bush; *R. odoratus*, Sweet-scented Raspberry; *R. saxatilis*, Stone-Bramble.

Rumex acetosus, Common Sorrel; *R. acetosella*, Sheep's Sorrel; *R. acutus*,

R. acutus, Sharp Dock; *R. aquaticus*, Water-Dock; *R. crispus*, Curled Dock; *R. obtusifolius*, Broad-leaved Dock; *R. sanguinarius*, Bloodwort.

Ruscus aculeatus, Common Knee-holly.

Ruta graveolens, Common Broad-leaved Garden Rue.

Saccharum officinarum, Sugar-cane.

Sagina procumbens, Pearlwort, the Procumbent.

Sagittaria sagittifolia, Common Arrow-head.

Salicornia fruticosa, Shrubby Samphire; *S. herbacea*, Jointed Glasswort.

Salix alba, White Willow; *S. amygdalina*, Almond-leaved Willow; *S. Babylonica*, Weeping Willow; *S. caprea*, Sallow; *S. cinerea*, Sallow Willow; *S. fragilis*, Crack-Willow; *S. herbacea*, Herbaceous Willow; *S. pentandra*, Sweet Willow; *S. purpurea*, Rose Willow; *S. rubra*, Red Willow; *S. triandra*, Smooth Willow; *S. viminalis*, Osier.

Salmo alpinus, Charr; *S. eperlanus*, Smelt; *S. fario*, Trout; *S. salar*, Common Salmon; *S. Thymalus*, Umber or Grayling.

Salsola fruticosa, Shrubby Saltwort; *S. kali*, Prickly Saltwort.

Salvia Pratensis, Meadow Clary; *S. officinalis*, Common Large Sage; *S. tomentosa*, Balsamine Sage; *S. Verbenaca*, Wild English Clary.

Sambucus ebulus, Dwarf Elder; *S. nigra*, Common Elder.

Sanguis Draconis, Dragon's Blood.

Santalum album, Yellow, or White, Sanders.

Saponaria officinalis, Common Soapwort.

Satureia hortensis, Summer Savory; *S. montana*, Winter Savory.

Satyrion hircinum, Satyrion.

Saxifraga granulata, Saxifrage the Common.

Scabiosa arvensis, Field Scabious; *S. succisa*, Devil's-bit Scabious.

Scandix odorata, Cicely the Sweet; *S. Peæden*, Common Shepherd's Needle.

Scarabeus Melolontha, Chafer.

Schænus Mariscus, Rush-grass, the Prickly.

Scilla maritima, Common Squill.

Scirpus lacustris, Bull-rush; *S. maritimus*, Salt-marsh Club-rush; *S. palustris*, Marsh Creeping Club-rush.

Sciurus vulgaris, Common Squirrel.

Scleranthus annuus, Annual Kna-well.

Scolopax arquata, Curlew; *S. gallinago*, Snipe; *S. rusticola*, Woodcock.

Scomber Thunnus, Tunny.

Scorbutus, Scurvy.

Scrophularia nodosa, Great Fig-wort.

Scutellaria galericulata, Common Scull-cap.

Secale cereale, Common Rye.

Sedum acre, Wall-pepper; *S. reflexum*, Yellow Stone-crop; *S. rupestre*, Rock Stone-crop; *S. Telephium*, Orpine Stone-crop.

Selinum palustre, Milk-weed, the Marsh.

Sempervivum tectorum, Common House-leek.

Senecio Jacobæa Ragwort; *S. vulgaris*, Common Groundsel.

Sepia, Cuttle-fish.

Serratula arvensis, Corn Saw-wort; *S. tinctoria*, Common Saw-wort.

Silene

- Silene nutans*, Nottingham Catch-fly.
- Silex*, Flint.
- Sinapis alba*, White Mustard ; *S. arvensis*, Charlock ; *S. nigra*, Common Mustard.
- Singultus*, Hiccough.
- Sison Amomum*, Common Bastard Stone-parsley.
- Sisymbrium amphibium*, Radish Water-cress ; *S. Nasturtium*, Common Water-cress ; *S. Sophia*, Flixweed Water-cress.
- Sium angustifolium*, Upper Water Parsnep ; *S. latifolium*, Broad-leaved Water Parsnep ; *S. nodifolium*, Creeping Water Parsnep ; *S. sisarium*, Skitret.
- Smilax Sarsaparilla*, Sarsaparilla.
- Solanum*, Nightshade ; *S. Dulcamara*, Woody-Nightshade ; *S. Lycopersicon*, Love-apple ; *S. nigrum*, Common Nightshade ; *S. Tuberosum*, Potatoe.
- Solidago Virgaurea*, Common Golden-Rod.
- Sonchus arvensis*, Corn Sow-thistle ; *S. oleraceus*, Common Sow-thistle ; *S. palustris*, Marsh Sow-thistle.
- Sorbus aucuparia*, Quicken-tree ; *S. domestica*, True Service-tree ; *S. hybrida*, Bastard Mountain-ash.
- Sparganium erectum*, Greater Burweed.
- Spartium junceum*, Spanish Broom ; *S. scoparium*, Common Broom.
- Spergula arvensis*, Corn Spurree.
- Sphacelus*, Mortification.
- Sphagnum palustre*, Grey Bog-moss.
- Sphinx*, Hawk-moth.
- Spinacia oleracea*, Spinach.
- Spiraea ulmaria*, Meadow Sweet.
- Spongia officinalis*, Common Sponge.
- Squalus Canicula*, Spotted Shark ;
- S. Carcharias*, Great White Shark ; *S. maximus*, Basking Shark.
- Stachys*, Woundwort ; *S. palustris*, Clown's All-heal ; *S. sylvatica*, Hedge-nettle Woundwort.
- Statice Armeria*, Common Thrift ; *S. Limonium*, Lavender-Thrift.
- Stannum*, Tin.
- Steatites*, Soap-earth.
- Strabismus*, Squinting.
- Strix flammea*, Common Owl.
- Struthio Camelus*, Ostrich.
- Sturnus vulgaris*, Starling.
- Styrax*, Storax-tree ; *S. Benzoe*, Benzoin ; *S. officinalis*, Common Storax-tree.
- Succinum*, Amber.
- Suffusio mellita*, Honey-dew.
- Sus scrofa*, Common Hog.
- Swietenia*, Mahogany.
- Symphitum officinale*, Common Comfrey.
- Syncope*, Swoon.
- Syringa vulgaris*, Common Lilac.
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- Taenia*, Tape-worm.
- Talpa Europæus*, European Mole.
- Tamarindus Indica*, Tamarind-tree.
- Tamariscus Gallica*, French Tamarisk.
- Tamus Africana*, African Bryony ; *T. communis*, Black Bryony ; *T. Cretica*, Spotted Bryony of Crete ; *T. racemosa*, Branched Bryony ; *T. variegata*, American Bryony.
- Tanacetum vulgare*, Common Tansey.
- Taxus bastata*, Common Yew-tree.
- Teres*, Round long Worm.
- Terres palustris*, Death-Watch.
- Testudo*, Tortoise ; *T. imbricata*, Hawk's-bill Tortoise ; *T. midas*, Com-

Common Turtle; *T. Orbicularis*, Common River-Turtle.

Tetrao coturnix, Quail; *T. Perdix*, Partridge; *T. Tetrax*, Common Grouse; *T. urogallus*, Woodcock.

Tettigoniae, Grasshoppers.

Teucrium chamaedrys, Common Germander; *T. marum*, Marum Germander; *T. scordium*, Water Germander; *T. Scorodinium*, Wood Germander.

Thalictrum flavum, Common Meadow-Rue.

Thea Bobea, Black Tea-tree; *T. viridis*, Green-tea.

Theobroma Cacao, Chocolate-tree.

Theriaca Andromachi, Venice Treacle.

Thlaspi arvense, Smooth Mithridate Mustard; *T. Bursa pastoris*, Shepherd's Purse.

Thymus, Thyme; *T. Acinos*, Wild Basil; *T. serpyllum*, Common Thyme; *T. vulgaris*, Garden Thyme.

Tilia Europæa; Common Lime-tree.

Tinea capitis, Scald-head.

Tofieldia palustris, Marsh Spider-wort.

Toluifera balsamum, Balsam of Tolu-tree.

Tormentilla erecta, Common Tormentil.

Trachea, Wind-pipe.

Tragopogon porrifolium, Purple Goat's-beard; *T. pratense*, Yellow Goat's-beard.

Trapa natans, Water Caltrops.

Trifolium arvense, Hare's-foot Trefoil; *T. fragiferum*, Strawberry Trefoil; *T. medium*, Red, or Perennial Clover; *T. Melilotus*, Melilot-Trefoil; *T. pratense*, Common Clover; *T. procumbens*, Hop-Clover; *T. repens*, White Clover.

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Triglochin maritimum, Sea Arrow-grass; *T. palustre*, Marsh Arrow-grass.

Trigonella foenum-græcum, Fenugreek.

Tringa alpina, Dunling Sand-Piper; *T. pugnax*, Ruff; *T. Vanellus*, Lapwing.

Triticum, Wheat; *T. aestivum*, Spring Wheat; *T. hybernum*, Winter-Wheat; *T. Polanicum*, Polish Wheat; *T. repens*, Dog's Grass; *T. Spelta*, Spelt, or German-Wheat; *T. turgidum*, Thick-spiked Wheat.

Tuber cibarium, Truffle.

Tulipa Gesneriana, Common Garden Tulip; *T. sylvestris*, Wild Tulip.

Turdus merula, Blackbird; *T. musicus*, Thrush.

Turritis glabra, Smooth Tower-mustard.

Tussilago Farfara, Common Colt's-foot; *T. Hybrida*, Long-stalked Colt's-foot; *T. Petasites*, Butter-burr.

Typba angustifolia, Small Cat's-tail; *T. latifolia*, Great Cat's-tail.

Vaccinium, myrtillus, Bilberry; *V. Oxycoccus*, Cranberry; *V. uliginosum*, Great Bilberry; *V. Vitis-Idæa*, Red Whortleberry.

Valeriana locusta, Corn-salad; *V. officinalis*, Great Wild Valerian.

Varicella, Chicken Pox.

Verbascum nigrum, Dark or Black Mullein; *V. Thapsus*, Great White Mullein.

Verbena officinalis, Vervain, the Common.

Veronica, Speedwell; *V. angallis*, Narrow-leaved Pimpernell Speedwell; *V. Baccabunga*, Brook-

li

lime;

hime; *V. Chamædrys*, Wild Germander; *V. officinalis*, Common Speedwell; *V. scutellaria*, Narrow-leaved Speedwell.

Vespa, Wasp; *V. coarctata*, Small Wasp; *V. Crabro*, Hornet; *V. Vulgaris*, Common Wasp.

Vespertilio, Bat.

Vicia, Vetch, or Tare; *V. Cracca*, Tufted Vetch; *V. faba*, Bean; *V. lathyroides*, Strangle Vetch; *V. sativa*, Common Vetch; *V. sepium*, Bush Vetch; *V. sylvatica*, Wood Vetch; *V. tuberosus*, Earth-nut, or Sow-bread.

Vinca minor, Lesser Periwinkle.

Viola, Violet; *V. canina*, Dog's Violet; *V. odorata*, Sweet Violet; *V. tricolor*, Heart's Ease.

Viscum album, Common Mistletoe.

Vitis vinifera, Common Vine.

Ulex Europæus, Common Furze.

Ulmus campestris, Elm Tree.

Ulva palmata, Palmated Sea-wrack.

Urceola elastica, Caoutchouc Vine.

Ursus, Bear; *U. arctos*, Black Bear; *U. lotor*, Raccoon; *U. luscus*, Wolverene; *U. maritimus*, Polar Bear; *U. molos*, Common Badger.

Urtica dioica, Common Nettle; *U. pilulifera*, Roman Nettle; *U. urens*, Lesser Stinging Nettle.

Urticaria, Nettle-rash.

Xanthium Strumarium, Lesser Burdock.

Zanthoxylon, Prickly Yellow-wood.

Zea Mays, Maize.

Zizania aquatica, Water-Zizany.

Zostera Aloides, Water Aloe; *Z. marina*, Sea-grass-Wrack.

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*** As this Index of Facts has been hastily compiled, the Reader is requested to supply the occasional deficiencies, or omissions, by reverting either to the primary articles, or by consulting the Indices of Synonyms, &c. which are prefixed to each Volume.

THE END.

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